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NEWS 3 NOV 26 MARPAT enhanced with FSORT command
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NEWS 5 NOV 26 Two new SET commands increase convenience of STN searching
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NEWS 10 JAN 07 WPIDS, WINDEX, and WPIX enhanced Japanese Patent Classification Data
NEWS 11 FEB 02 Simultaneous left and right truncation (SLART) added for CERAB, COMPUB, ELCOM, and SOLIDSTATE
NEWS 12 FEB 02 GENBANK enhanced with SET PLURALS and SET SPELLING
NEWS 13 FEB 06 Patent sequence location (PSL) data added to USGENE
NEWS 14 FEB 10 COMPENDEX reloaded and enhanced
NEWS 15 FEB 11 WTEXTILES reloaded and enhanced
NEWS 16 FEB 19 New patent-examiner citations in 300,000 CA/CAplus patent records provide insights into related prior art
NEWS 17 FEB 19 Increase the precision of your patent queries -- use terms from the IPC Thesaurus, Version 2009.01
NEWS 18 FEB 23 Several formats for image display and print options discontinued in USPATFULL and USPAT2
NEWS 19 FEB 23 MEDLINE now offers more precise author group fields and 2009 MeSH terms
NEWS 20 FEB 23 TOXCENTER updates mirror those of MEDLINE - more precise author group fields and 2009 Mesh terms
NEWS 21 FEB 23 Three million new patent records blast AEROSPACE into STN patent clusters
NEWS 22 FEB 25 USGENE enhanced with patent family and legal status display data from INPADOCDB
NEWS 23 MAR 06 INPADOCDB and INPACAMDB enhanced with new display formats
NEWS 24 MAR 11 EPFULL backfile enhanced with additional full-text applications and grants
NEWS 25 MAR 11 ESBIOBASE reloaded and enhanced
NEWS 26 MAR 20 CAS databases on STN enhanced with new super role for nanomaterial substances
NEWS 27 MAR 23 CA/CAplus enhanced with more than 250,000 patent equivalents from China

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,
AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

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NEWS LOGIN Welcome Banner and News Items
NEWS IPC8 For general information regarding STN implementation of IPC 8

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FILE 'HOME' ENTERED AT 16:36:21 ON 27 MAR 2009

FILE 'REGISTRY' ENTERED AT 16:38:48 ON 27 MAR 2009
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STRUCTURE FILE UPDATES: 26 MAR 2009 HIGHEST RN 1127762-87-1
DICTIONARY FILE UPDATES: 26 MAR 2009 HIGHEST RN 1127762-87-1

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<http://www.cas.org/support/stngen/stndoc/properties.html>

=> Uploading C:\Program Files\Stnexp\Queries\10511564-butane-RCE.str

L1 STRUCTURE UPLOADED

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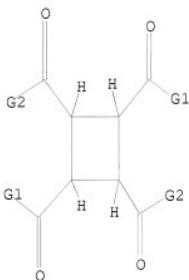
L1 HAS NO ANSWERS

STB

O-H

N 2

O-³Ak



G1 [@1],[@2],[@3]

G2 [@2],[@3]

Structure attributes must be viewed using STN Express query preparation.

=> s 11

SAMPLE SEARCH INITIATED 16:39:17 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED - 2341 TO ITERATE

85.4% PROCESSED 2000 ITERATIONS
INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)
SEARCH TIME: 00.00.01

11 ANSWERS

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
BATCH **COMPLETE**
PROJECTED ITERATIONS: 43918 TO 49722
PROJECTED ANSWERS: 42 TO 472

L2 11 SEA SSS SAM L1

=> s 11 full
FULL SEARCH INITIATED 16:39:21 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 47253 TO ITERATE

100.0% PROCESSED 47253 ITERATIONS
SEARCH TIME: 00.00.02

198 ANSWERS

L3 198 SEA SSS FUL L1

=> file caplus
COST IN U.S. DOLLARS
FULL ESTIMATED COST

| SINCE FILE ENTRY | TOTAL SESSION |
|------------------|---------------|
| 185.88 | 186.76 |

FILE 'CAPLUS' ENTERED AT 16:39:28 ON 27 MAR 2009
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FILE COVERS 1907 - 27 Mar 2009 VOL 150 ISS 14
FILE LAST UPDATED: 26 Mar 2009 (20090326/ED)

Caplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2008.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

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=> s 13
L4      78 L3

=> s 14 not py > 2003
    7039611 PY > 2003
L5      67 L4 NOT PY > 2003

=> d 15 ibib abs hitstr 1-
YOU HAVE REQUESTED DATA FROM 67 ANSWERS - CONTINUE? Y/(N):y

L5  ANSWER 1 OF 67  CAPLUS  COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER:          2001:489385  CAPLUS
DOCUMENT NUMBER:          135:77662
TITLE:                    Preparation of alicyclic epoxy ester for cured resin
INVENTOR(S):              Shimoda, Teruyoshi; Date, Hideki; Takahashi, Yasushi;
                           Hatanaka, Kohei
PATENT ASSIGNEE(S):        Asahi Kasei K. K., Japan; Asahi Kasei Epoxy Co., Ltd.
SOURCE:                   PCT Int. Appl., 226 pp.
CODEN:                    PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   2
PATENT INFORMATION:
```

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|----------|-----------------|----------|
| WO 2001047907 | A1 | 20010705 | WO 2000-JP9352 | 20001227 |
| W: | AB, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, | | | |
| CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GR, GD, GE, GH, GM, HR, | | | | |
| HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, | | | | |
| LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, | | | | |
| SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, | | | | |
| YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, | | | | |

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
 BE, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 JP 2001181238 A 20010703 JP 1999-368841 19991227
 JP 2003286276 A 20031010 JP 1999-369308 19991227
 PRIORITY APPLN. INFO.: JP 1999-368841 A 19991227
 JP 1999-369308 A 19991227

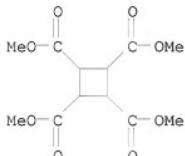
OTHER SOURCE(S): MARPAT 135:77662

AB Compound RXxYyZz is prepared for cured resin, wherein X is 2,3-epoxycyclohexyl ester or 2,3-epoxycyclopentyl ester, Y is epoxyalkyl ester and Z is alkyl ester, $x + 1 - 20$, $y = 0 - 5$, $z = 0 - 5$, and $x + y = 2 - 20$. Thus, 1,3,5-benzenetricarboxylic acid 2,3-epoxycyclohexyl ester prepared by transesterification of corresponding acid Me ester and 3-hydroxycyclohexene followed by oxidation was mixed with curing agent at ratio 19.5/80.5 to give a product, showing good weather and water resistance.

IT 14495-41-1
RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of alicyclic epoxy ester for cured resin)

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 2000:395913 CAPLUS
 DOCUMENT NUMBER: 133:317334
TITLE: Inhibition of farnesyltransferase with A-176120, a novel and potent farnesyl pyrophosphate analogue
AUTHOR(S): Tahir, S. K.; Gu, W.-Z.; Zhang, H.-C.; Leal, J.; Lee, J. Y.; Kovar, P.; Saeed, B.; Cherian, S. P.; Devine, E.; Cohen, J.; Warner, R.; Wang, Y.-C.; Stout, D.; Arendsen, D. L.; Rosenberg, S.; Ng, S.-C.
CORPORATE SOURCE: Pharmaceutical Product Research Division, Cancer Research, Abbott Laboratories, Abbott Park, IL, 60064, USA
SOURCE: European Journal of Cancer (2000), 36(9), 1161-1170
PUBLISHER: CODEN: EJCAEL; ISSN: 0959-8049
DOCUMENT TYPE: Elsevier Science Ltd.
LANGUAGE: Journal
 English

AB Farnesylation of Ras is required for its transforming activity in human cancer and the reaction is catalyzed by the enzyme farnesyltransferase. Recently, we discovered a novel chemical series of potent farnesyl pyrophosphate (FPP) analogs which selectively inhibited farnesyltransferase. Our most potent compound to date in this series, A-176120, selectively inhibited farnesyltransferase activity (IC₅₀ 1.2±0.3 nM) over the closely related enzymes geranylgeranyltransferase I (GGTaseI) (IC₅₀ 423±1.8 nM), geranylgeranyltransferase II (GGTaseII) (IC₅₀ 3000 nM) and squalene synthase (SSase) (IC₅₀ 10000 nM).

A-176120 inhibited ras processing in H-ras-transformed NIH3T3 cells and HCT116 K-ras-mutated cells (ED₅₀ 1.6 and 0.5 μM, resp.). The anti-angiogenic potential of A-176120 was demonstrated by a decrease in Ras processing, cell proliferation and capillary structure formation of human umbilical vein endothelial cells (HUVEC), and a decrease in the secretion of vascular endothelial growth factor (VEGF) from HCT116 cells. In vivo, A-176120 reduced H-ras NIH3T3 tumor growth and extended the lifespan of nude mice inoculated with H- or K-ras-transformed NIH3T3 cells. A-176120 also had an additive effect in combination with cyclophosphamide in nude mice inoculated with K-ras NIH3T3 transformed cells. Overall, our results demonstrate that A-176120 is a potent FPP mimetic with both antitumor and anti-angiogenic properties.

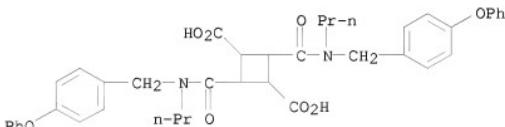
IT 303068-56-6, A 87050 303068-57-7, A 88681

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(farnesyltransferase inhibition by A-176120, novel and potent farnesyl pyrophosphate analog)

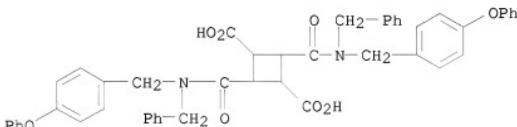
RN 303068-56-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 303068-57-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]phenylmethyl]amino]carbonyl]- (CA INDEX NAME)



REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 3 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:723573 CAPLUS

DOCUMENT NUMBER: 129:343334

ORIGINAL REFERENCE NO.: 129:69929a,69932a

TITLE: Preparation of cyclobutane-derivative inhibitors of squalene synthase and protein farnesyl transferase

INVENTOR(S): Arendsen, David L.; Baker, William R.; Fakhoury, Stephen A.; Fung, Anthony K. L.; Garvey, David S.; McClellan, William J.; O'connor, Stephen J.; Prasad, Rajnandan N.; Rockway, Todd W.; Rosenberg, Saul H.; Stein, Herman H.; Shen, Wang; Stout, David M.; Sullivan, Gerard M.; Augeri, David J.

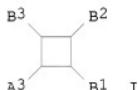
PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: U.S., 45 pp., Cont.-in-part of U.S. Ser. No. 564,524,

abandoned.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|-------------|
| US 5831115 | A | 19981103 | US 1996-626859 | 19960412 |
| CA 2218597 | A1 | 19961024 | CA 1996-2218597 | 19960418 |
| WO 9633159 | A1 | 19961024 | WO 1996-US5529 | 19960418 |
| W: CA, JP, MX
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| EP 821665 | A1 | 19980204 | EP 1996-912978 | 19960418 |
| EP 821665 | B1 | 20011004 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI | | | | |
| JP 11504017 | T | 19990406 | JP 1996-531980 | 19960418 |
| EP 1090908 | A2 | 20010411 | EP 2000-124275 | 19960418 |
| EP 1090908 | A3 | 20010516 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI | | | | |
| AT 206390 | T | 20011015 | AT 1996-912978 | 19960418 |
| PRIORITY APPLN. INFO.: | | | US 1995-426553 | B2 19950421 |
| | | | US 1995-428357 | B2 19950421 |
| | | | US 1995-564524 | B2 19951129 |
| | | | US 1996-626859 | A 19960412 |
| | | | EP 1996-912978 | A3 19960418 |
| | | | WO 1996-US5529 | W 19960418 |

OTHER SOURCE(S): MARPAT 129:343334
GI



AB The title compds (I; permitted substituent values are defined in the disclosure), useful for inhibiting protein farnesyl transferase and the farnesylation of the oncogene protein Ras, or for inhibiting de-novo squalene production resulting in the inhibition of cholesterol biosynthesis, are prepared. Thus, (1a,2β,3β,4α)-1-[N-benzyl-N-[(4S,5S)-(4-hydroxy-5-methyl-6-phenylhexyl)aminocarbonyl]cyclobutane-2,3,4-tricarboxylic acid, prepared from propionaldehyde in 10 steps, demonstrated a 92% inhibition of protein farnesyl transferase at 1μM.

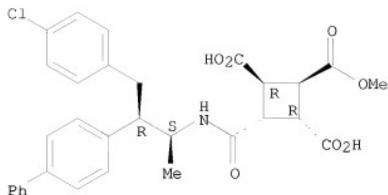
IT 1101453-50-2

RL: PRFH (Prophetic)
(Preparation of cyclobutane-derivative inhibitors of squalene synthase and protein farnesyl transferase)

RN 1101453-50-2 CAPLUS

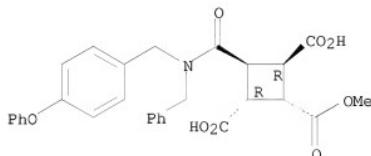
CN 1,2,3-Cyclobutanetricarboxylic acid,
4-[[[(1S,2R)-2-[(1,1'-biphenyl)-4-yl]-3-(4-chlorophenyl)-1-methylpropyl]amino]carbonyl]-, 2-methyl ester, (1R,2β,3R,4α)-
(CA INDEX NAME)

Absolute stereochemistry.



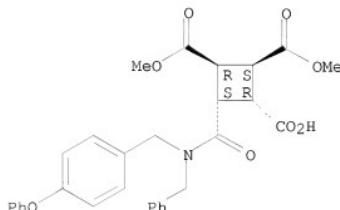
IT 184228-21-5P 184228-25-9P 184228-39-5P
 184488-03-7P
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of cyclobutane-derivative inhibitors of squalene synthase and protein farnesyl transferase)
 RN 184228-21-5 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-, 2-methyl ester, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



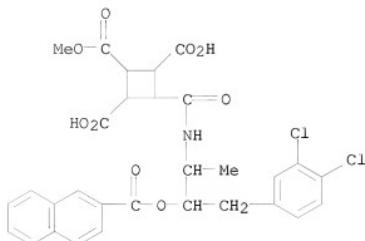
RN 184228-25-9 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-, 1,2-dimethyl ester, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

Relative stereochemistry.



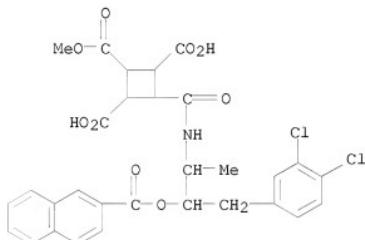
RN 184228-39-5 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(1S,2R)-3-(3,4-dichlorophenyl)-1-methyl-2-[(2-naphthalenylcarbonyl)oxy]propyl]amino]carbonyl]-, 2-methyl ester,

stereoisomer (9CI) (CA INDEX NAME)



RN 184488-03-7 CAPLUS

CN 1,2,3-Cyclobutanetricarboxylic acid,
4-[[[(1S,2R)-3-(3,4-dichlorophenyl)-1-methyl-2-[(2-naphthalenylcarbonyl)oxy]propyl]amino]carbonyl]-, 2-methyl ester,
stereoisomer (9CI) (CA INDEX NAME)



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:502539 CAPLUS

DOCUMENT NUMBER: 129:135923

ORIGINAL REFERENCE NO.: 129:27793a, 27796a

TITLE: Cyclobutane derivatives as inhibitors of squalene synthetase and protein farnesyltransferase

INVENTOR(S): Baker, William R.; Rosenberg, Saul H.; Fung, Anthony K. L.; Rockway, Todd W.; Fakhoury, Stephen A.; Garvey, David S.; Donner, B. Gregory; O'Connor, Stephen J.; Prasad, Rajnandan N.; Shen, Wang; Stout, David M.; Sullivan, Gerard M.

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: U.S., 103 pp., Cont.-in-part of U.S. Ser. No. 429,095, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

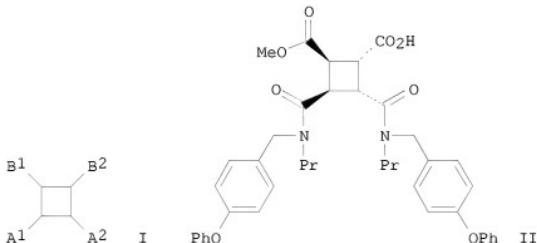
PATENT INFORMATION:

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|---|------|----------|---|--|
| US 5783593 | A | 19980721 | US 1996-633262 | 19960429 |
| WO 9634851 | A1 | 19961107 | WO 1996-US6193 | 19960502 |
| W: AU, CA, JP, KR, MX
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
AU 9656731 | A | 19961121 | AU 1996-56731
US 1993-147708
US 1994-289711
US 1994-322783
US 1995-429095
US 1996-633262
WO 1996-US6193 | 19960502
B2 19931104
B2 19940909
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A 19960429
W 19960502 |

PRIORITY APPLN. INFO.:

OTHER SOURCE(S): MARPAT 129:135923

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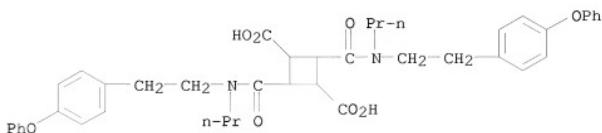
AB The invention provides compds. I [A₁, A₂ = -XC(O)G, -XC(S)G, -(CH₂)_qNR₁R₂; X = bond, CH₂, O, S, (un)substituted NH; G = R₂, NR₁R₂, OR₂, SR₂; R₁ = H, alkyl, alkenyl, (un)substituted aryl, heterocyclyl, etc.; R₂ = alkenyl, (un)substituted aryl, heterocyclyl, etc.; q = 0-2; B₁, B₂ = CH₂OH, CH:NOH, WR₃, etc.; W = bond, alkylene, alkenylene, CONH, NHCONH; R₃ = various (un)substituted heterocyclic groups or squaric acid residue]. Also disclosed are preparation processes, intermediates, pharmaceutical compns., and treatment of hypercholesterolemic disorders (hyperlipidemia, atherosclerosis), cancer, or fungal infections using the compds. I inhibit biosynthesis of cholesterol (and also fungal growth) by inhibiting squalene synthetase. I also inhibit farnesylation of the oncogene protein Ras by inhibiting protein farnesyltransferase (no data). For example, aminolysis of 1,2,3,4-cyclobutanetetracarboxylic dianhydride with 2 equiv 4-(PhO)C₆H₄CH₂NHPr, followed by monoesterification of the resultant diacid with (R)-(-)-sec-phenethyl alc., separation of one diastereomer, hydrogenolytic deesterification to a single diacid enantiomer, diesterification of this with diazomethane, and partial hydrolysis with LiOH, gave claimed title compound (-)-II. A large group of tested compds. I gave 50-99% inhibition of rat liver microsomal squalene synthetase at 10 μ M in vitro. Approx. 380 synthetic examples (over 185 compds. with data) are given.

IT 169943-31-1P 169943-32-2P 169943-33-3P
169943-34-4P 169943-35-5P 169943-36-6P
169943-37-7P 169943-38-8P 169943-39-9P

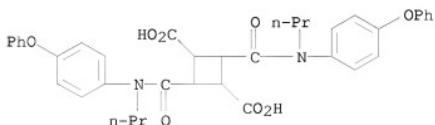
RL: BYP (Byproduct); PREP (Preparation)

(byproduct; preparation of cyclobutane derivs. as inhibitors of squalene

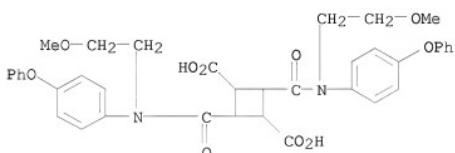
synthetase and protein farnesyltransferase)
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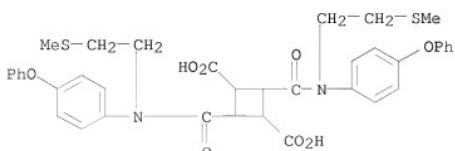
RN 169943-32-2 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(4-phenoxyphenyl)propylamino]carbonyl]- (CA INDEX NAME)



RN 169943-33-3 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-methoxyethyl)(4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)

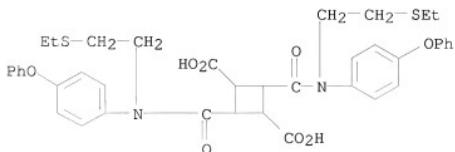


RN 169943-34-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(methylthio)ethyl](4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



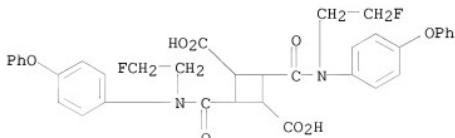
RN 169943-35-5 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(ethylthio)ethyl](4-

phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



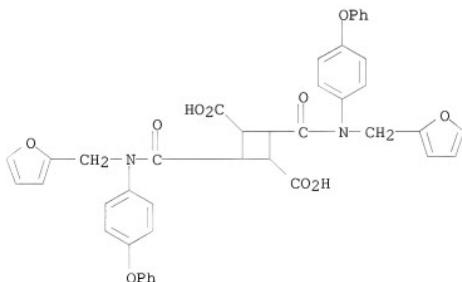
RN 169943-36-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-fluoroethyl)(4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



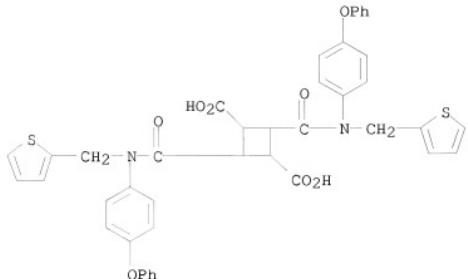
RN 169943-37-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-furanylmethyl)(4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



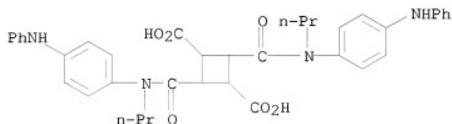
RN 169943-38-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(4-phenoxyphenyl)(2-thienylmethyl)amino]carbonyl]- (CA INDEX NAME)



RN 169943-39-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylamino)phenyl]propylamino]carbonyl]- (CA INDEX NAME)



IT 169942-85-2P 169943-03-7P 169943-05-9P

169943-06-0P 169943-07-1P 170207-72-4P

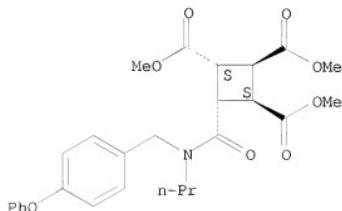
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169942-85-2 CAPLUS

CN 1,2,3-Cyclobutanetricarboxylic acid,
4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, trimethyl ester,
($1\alpha,2\alpha,3\beta,4\beta$)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

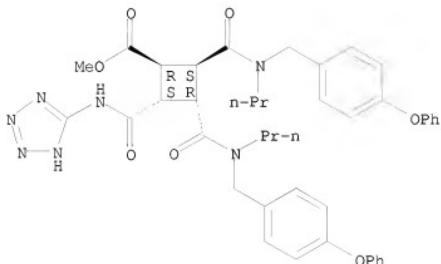


RN 169943-03-7 CAPLUS

CN Cyclobutanecarboxylic acid, 2,3-bis[[[4-(phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1*H*-tetrazol-5-ylamino)carbonyl]-, methyl ester, ($1\text{R},2\text{S},3\text{R},4\text{S}$)-rel- (9CI) (CA INDEX

NAME)

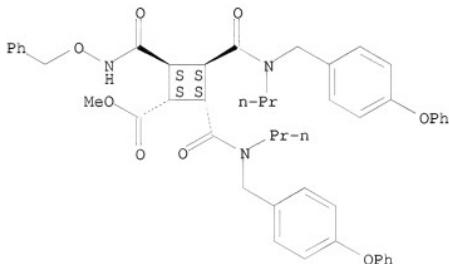
Relative stereochemistry.



RN 169943-05-9 CAPLUS

CN Cyclobutane carboxylic acid, 2,3-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(phenylmethoxy)amino]carbonyl-, methyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

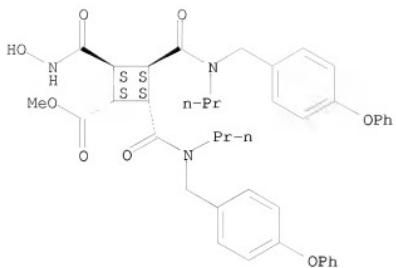
Relative stereochemistry.



RN 169943-06-0 CAPLUS

CN Cyclobutane carboxylic acid, 2-[(hydroxyamino)carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, methyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

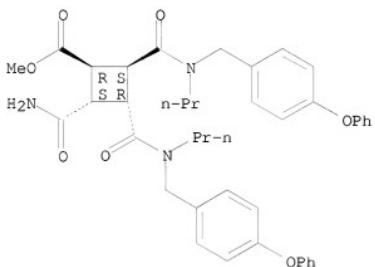
Relative stereochemistry.



RN 169943-07-1 CAPLUS

CN Cyclobutane carboxylic acid, 2-(aminocarbonyl)-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, methyl ester, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

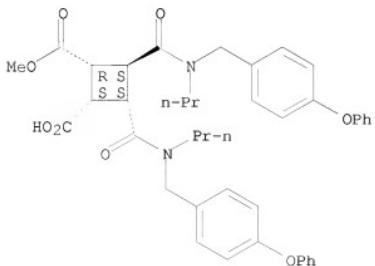
Relative stereochemistry.



RN 170207-72-4 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, monomethyl ester, (1R,2S,3S,4S)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

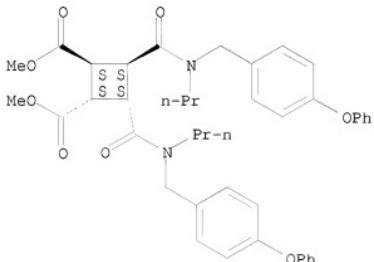


IT 169942-55-6P 169942-56-7P
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesytransferase)

RN 169942-55-6 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, dimethyl ester,
 (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

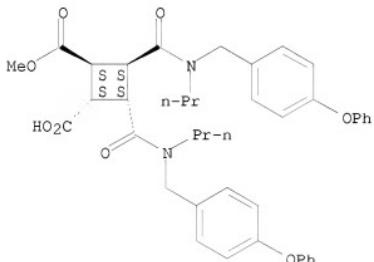
Relative stereochemistry.



RN 169942-56-7 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, monomethyl ester,
 (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



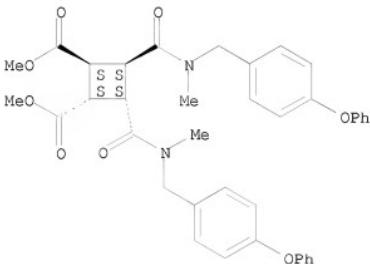
IT 169942-41-0P 169942-53-4P 169942-57-8P
 169942-58-9P 169942-63-6P 169942-65-8P
 169942-67-0P 169942-68-1P 169942-69-2P
 169942-70-5P 169944-08-5P 169944-09-6P
 185209-36-3P 185209-37-4P 185209-38-5P
 185209-39-6P 185209-40-9P 185209-41-0P
 185209-42-1P 185209-43-2P 185209-44-3P
 185209-64-7P 185209-78-3P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169942-41-0 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[methyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, dimethyl ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

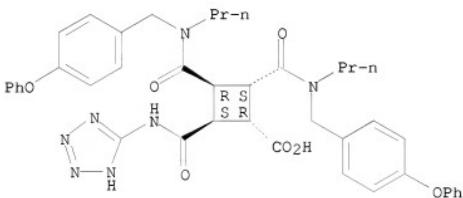
Relative stereochemistry.



RN 169942-53-4 CAPLUS

CN Cyclobutanecarboxylic acid, 2,3-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1H-tetrazol-5-ylamino)carbonyl]-, (1R,2S,3R,4S)-rel- (9CI) (CA INDEX NAME)

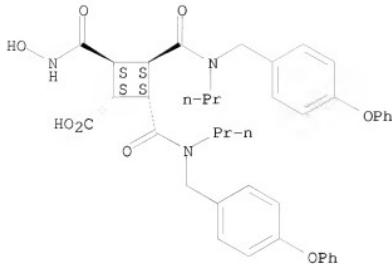
Relative stereochemistry.



RN 169942-57-8 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(hydroxyamino)carbonyl]-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

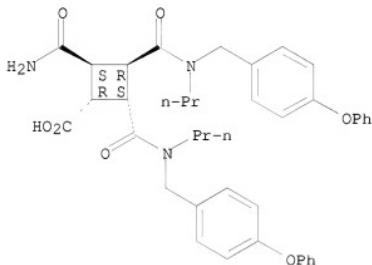
Relative stereochemistry.



RN 169942-58-9 CAPLUS

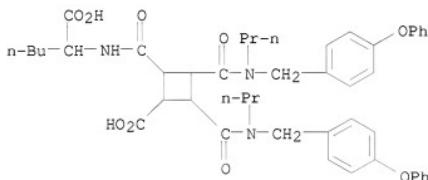
CN Cyclobutanecarboxylic acid, 2-(aminocarbonyl)-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 169942-63-6 CAPLUS

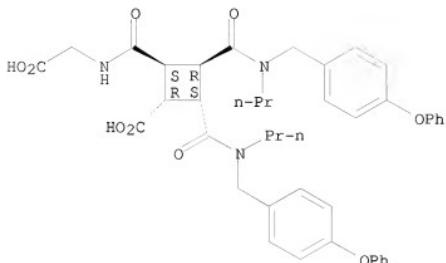
CN Cyclobutanecarboxylic acid, 2-[(1-carboxypentyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl- (CA INDEX NAME)



RN 169942-65-8 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(carboxymethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

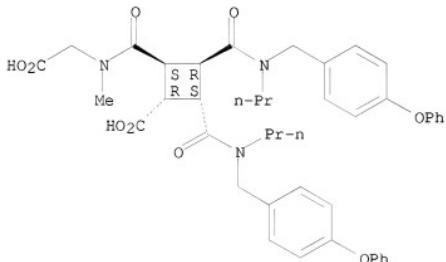
Relative stereochemistry.



RN 169942-67-0 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(carboxymethyl)methylamino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

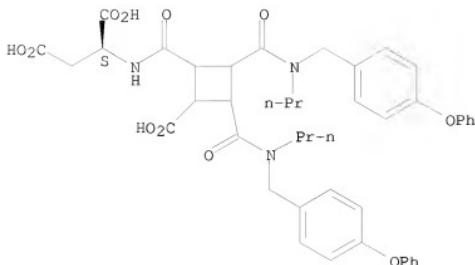
Relative stereochemistry.



RN 169942-68-1 CAPLUS

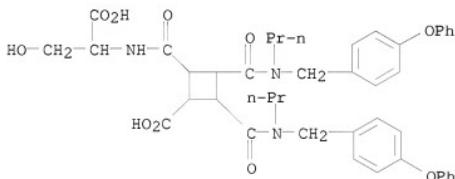
CN L-Aspartic acid, N-[[2-carboxy-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]cyclobutyl]carbonyl- (CA INDEX NAME)

Absolute stereochemistry.



RN 169942-69-2 CAPLUS

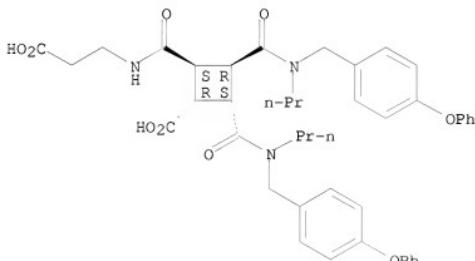
CN Cyclobutane carboxylic acid, 2-[(1-carboxy-2-hydroxyethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl- (CA INDEX NAME)



RN 169942-70-5 CAPLUS

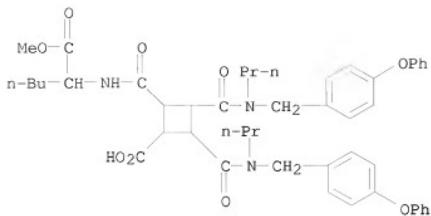
CN Cyclobutane carboxylic acid, 2-[(2-carboxyethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

Relative stereochemistry.



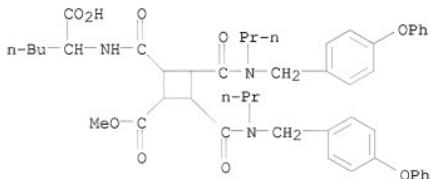
RN 169944-08-5 CAPLUS

CN Cyclobutane carboxylic acid, 2-[[1-(methoxycarbonyl)pentyl]amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl- (CA INDEX NAME)



RN 169944-09-6 CAPLUS

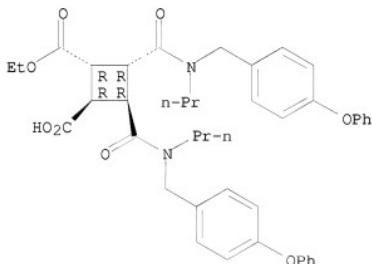
CN Cyclobutanecarboxylic acid, 2-[(1-carboxypentyl)amino]carbonyl-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-methyl ester (CA INDEX NAME)



RN 185209-36-3 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-ethyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

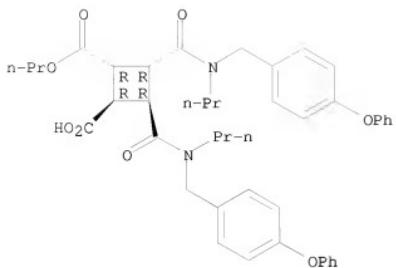
Relative stereochemistry.



RN 185209-37-4 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-propyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

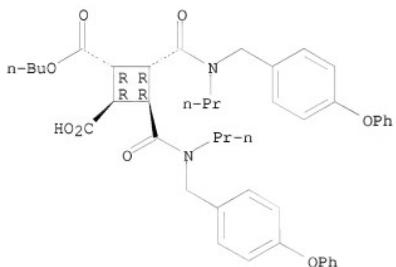
Relative stereochemistry.



RN 185209-38-5 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, 1-butyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

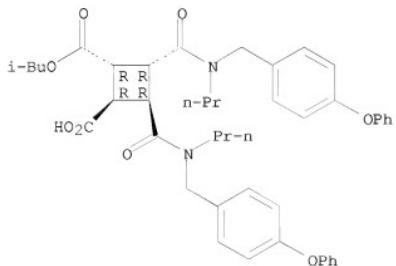
Relative stereochemistry.



RN 185209-39-6 CAPLUS

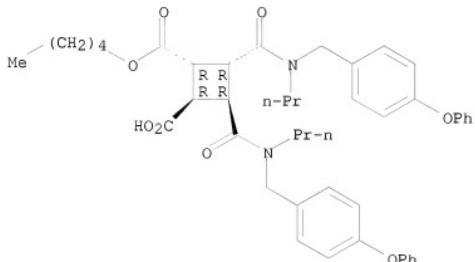
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, mono(2-methylpropyl) ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



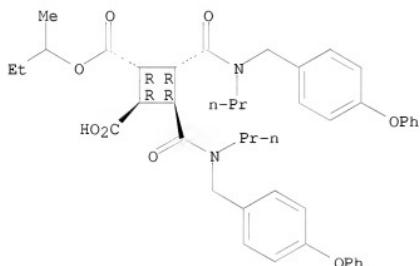
RN 185209-40-9 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-pentyl ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



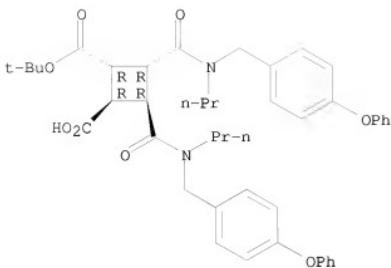
RN 185209-41-0 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-(1-methylpropyl) ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 185209-42-1 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-(1,1-dimethylethyl) ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

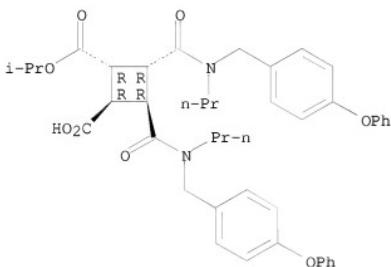
Relative stereochemistry.



RN 185209-43-2 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, 1-(1-methylethyl) ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

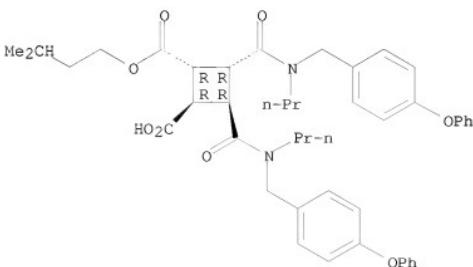
Relative stereochemistry.



RN 185209-44-3 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, mono(3-methylbutyl) ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

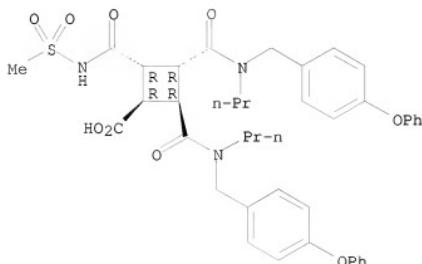
Relative stereochemistry.



RN 185209-64-7 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(methylsulfonyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2R,3R,4R)-rel-(CA INDEX NAME)

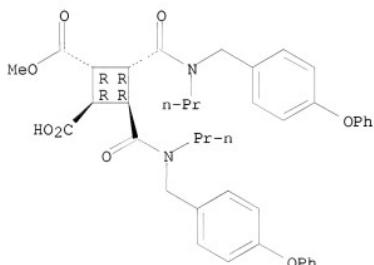
Relative stereochemistry.



RN 185209-78-3 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-methyl ester, (1R,2R,3R,4R)-rel-(-) (CA INDEX NAME)

Rotation (-). Absolute stereochemistry unknown.



REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:235919 CAPLUS

DOCUMENT NUMBER: 128:270941

ORIGINAL REFERENCE NO.: 128:53641a, 53644a

TITLE: Preparation and properties of high molecular weight polyamic ester having a cyclobutane moiety in the main chain

AUTHOR(S): Hasegawa, Masaki; Miura, Hirohiko; Haga, Naoki;

Hayakawa, Akira; Saito, Kiyoshi

CORPORATE SOURCE: Department of Materials Science and Technology,
Faculty of Engineering, Toin University of Yokohama,
Yokohama, 225, Japan

SOURCE:

High Performance Polymers (1998), 10(1), 11-21

CODEN: HPPOEY; ISSN: 0954-0083

PUBLISHER:

Institute of Physics Publishing

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Preparation and properties of the polyimide derived from cyclobutanetetracarboxylic dianhydride (CBDA) with diamines are investigated, focusing on the interfacial polycondensation of cyclobutanetetracarboxylic acid di-Me ester dichloride (2a) with diamines. Di-Me ester was conveniently prepared from CBDA by refluxing in methanol solution. Di-Me ester consists of two regio isomers; one is α -type (1a) with centrosymmetry, the other is β -type (1b) with plane symmetry. Separation of the mixture into each of pure 1a and 1b was successfully performed

by fractional crystallization. The structure of the first fraction is 1a, which was determined by x-ray crystal anal. The second fraction was necessarily assigned to 1b. 1A was converted into 2a by the reaction with thionyl chloride. The interfacial polycondensation of 2a with diamines afforded a high mol. weight polyamic ester. Polyimide was obtained only by heating the polyamic ester to about 230-280°C. The cyclobutane polyimide thus obtained was thermally stable up to 400°C, and less stable under hydrolysis than polypyromellitimide.

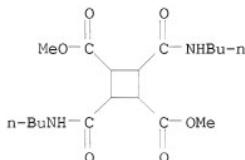
IT 205655-16-9P, 1,2,3,4-Cyclobutanetetracarboxylic acid 1,3-dimethyl ester-2,4-dibutylamide

RL: SPN (Synthetic preparation); PREP (Preparation)
(model compound; preparation and properties of high mol. weight polyamic esters

having a cyclobutane moiety in the main chain)

RN 205655-16-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(butylamino)carbonyl]-, dimethyl ester (9CI) (CA INDEX NAME)



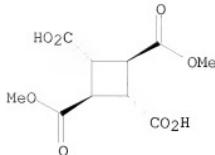
IT 2957-97-3P, 1,2,3,4-Cyclobutanetetracarboxylic acid 1,3-dimethyl ester 205655-11-4P, 1,2,3,4-Cyclobutanetetracarboxylic acid 1,3-dimethyl ester-2,4-dichloride-hexamethylenehexanediamine copolymer, polyamic acid sru 205655-14-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid 1,3-dimethyl ester-2,4-dichloride-4,4'-oxydianiline copolymer, polyamic acid sru

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and properties of high mol. weight polyamic esters having a cyclobutane moiety in the main chain)

RN 2957-97-3 CAPLUS

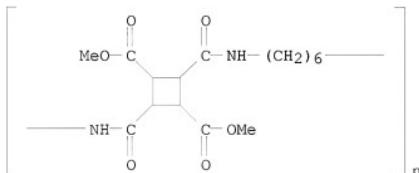
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester, (1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



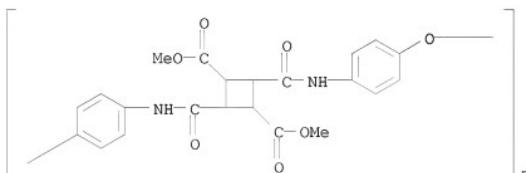
RN 205655-11-4 CAPLUS

CN Poly[iminocarbonyl[2,4-bis(methoxycarbonyl)-1,3-cyclobutanediyl]carbonylimino-1,6-hexanediyil] (9CI) (CA INDEX NAME)



RN 205655-14-7 CAPLUS

CN Poly[oxy-1,4-phenyleneimino carbonyl[2,4-bis(methoxycarbonyl)-1,3-cyclobutanediyl]carbonylimino-1,4-phenylene] (9CI) (CA INDEX NAME)



REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1997:436082 CAPLUS

DOCUMENT NUMBER: 127:50632

ORIGINAL REFERENCE NO.: 127:9661a, 9664a

TITLE: Preparation of cyclic amic acid derivatives as inhibitors of protein-farnesyl transferase and antitumor agents

INVENTOR(S): Iwasawa, Yoshikazu; Aoyama, Tetsuya; Kawakami, Kumiko; Arai, Sachie; Satoh, Toshihiko; Monden, Yoshiaki

PATENT ASSIGNEE(S): Banyu Pharmaceuticals Co., Ltd., Japan

SOURCE: PCT Int. Appl., 100 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|--------|-----------|---|----------------------------------|
| WO 9717321 | A1 | 19970515 | WO 1996-JP3239 | 19961106 |
| W: AU, CA, CN, JP, KR, US
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| AU 9675051 | A | 19970529 | AU 1996-75051
JP 1995-313625
WO 1996-JP3239 | 19961106
19951107
19961106 |
| PRIORITY APPLN. INFO.: | | | | |
| OTHER SOURCE(S):
GI | MARPAT | 127:50632 | | |

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

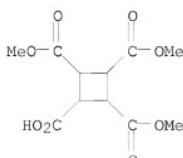
AB Compds. of general formula [I]; wherein Ar1, Ar2 and Ar3 = aryl or heteroaryl; Cy = aryl, heteroaryl, alicyclic; Q = (CH2)^m (^m = an integer of 1 to 6) or (CH2)ⁿ-W-(CH2)^p (W = oxygen, sulfur, vinylene or ethynylene; n, p = an integer of 0 to 3); R1 = H, halo, OH, (un)substituted lower alkyl or alkoxy; R2, R7, R8 = H, halo, OH, lower alkyl or alkoxy; R3, R4 = H, halo, OH, NH2, NO2, cyano, CO2H, lower alkoxy carbonyl, CONH2, lower alkyl carbamoyl, lower alkyl, hydroxylalkyl, fluoroalkyl, or alkoxy; R5 = lower alkyl; R6 = H, lower alkyl; R9, R10 = H, OH, lower alkyl; R11 = OH, CO2H, lower alkyl, hydroxylalkyl, or alkoxy; p, n = an integer of 0 to 2; m = 0 or 1] or pharmaceutically acceptable salts and esters thereof are prepared. An antitumor agent containing I as the active ingredient is claimed. Thus, a 5-carbamoyl-1,3-dioxolane-2,4-tricarboxylic acid derivative (II; R = CHO, R12 = Me, R13 = Et) (preparation given) underwent Wittig reaction with 2-benzoxazolylmethyltriphenylphosphonium chloride using NaH in THF followed by saponification with LiOH in aqueous THF and acidification with 1 N aqueous HCl to give II (R = Q, R12 = R13 = H). The latter compound in vitro showed IC50 of 0.1 nM for inhibiting protein-farnesyl transferase and 3.6 nM for inhibiting the farnesylation of Ras protein in activated ras gene-transformed NIH3T3 cells and in vivo inhibited the proliferation of activated human Ha-ras-transformed cells (NIH/ras) transplanted in mice by 23, 41, and 82% at 20, 40, and 80 mg/kg i.p.

IT 191166-13-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic amic acid derivs. as inhibitors of protein-farnesyl transferase and antitumor agents)

RN 191166-13-9 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3-trimethyl ester (CA INDEX NAME)



REFERENCE COUNT:

2

THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 7 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1997:372557 CAPLUS

DOCUMENT NUMBER: 127:65594

ORIGINAL REFERENCE NO.: 127:12539a,12542a

TITLE: Preparation of cyclobutanecarboxamide-derivative
inhibitors of protein farnesyltransferase and squalene
synthase

INVENTOR(S): Stein, Herman H.; Baker, William R.; Fung, Anthony K.
L.; Rosenberg, Saul H.; Rockway, Todd W.; Fakhoury,
Stephen A.; Garvey, David S.; Donner, B. Gregory;
McClellan, William J.; O'Connor, Stephen J.; Prasad,
Rajnandan; Shen, Wang; Sullivan, Gerard M.

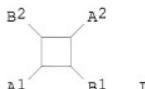
PATENT ASSIGNEE(S): Abbott Laboratories, USA
SOURCE: U.S., 49 pp., Cont.-in-part of U.S. Ser. No. 194,366,
abandoned.

CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|-------------|
| US 5631401 | A | 19970520 | US 1995-378334 | 19950124 |
| AU 9520444 | A | 19960801 | AU 1995-20444 | 19950601 |
| PRIORITY APPLN. INFO.: | | | US 1994-194366 | B2 19940209 |
| | | | US 1995-378334 | A 19950126 |

OTHER SOURCE(S): MARPAT 127:65594
GI



AB The title compds. [I; A1, A2 = CON(R1)R2; R1 = H, (un)substituted alkyl, cycloalkyl, aryl, alkenyl, alkynyl, etc.; R2 = aryl, alkenyl alkynyl, (un)substituted alkyl, etc.; NR1R2 = (un)substituted heterocycl; B1, B2 = CO2R'; R' = H, carboxy-protecting group], useful for inhibiting protein farnesyltransferase and de novo squalene production resulting in the inhibition of cholesterol biosynthesis, are prepared Thus, (1a,2 β ,3 β ,4 α)-1-[N-propyl-N-(4-phenoxybenzyl)aminocarbonyl]-3-[N-benzyl-N-(4-phenoxybenzyl)aminocarbonyl]cyclobutane-2,4-dicarboxylic acid, prepared by the amidation of 1,2,3,4-cyclobutanetetracarboxylic acid dianhydride with N-propyl-4-phenoxybenzyl amine and N-benzyl-4-phenoxybenzyl amine, demonstrated a 94% inhibition of protein farnesyltransferase at 1 μ M.

IT 171348-74-6P 171348-75-7P 171348-76-8P
171348-77-9P 171348-78-0P 171348-79-1P
171348-80-4P 171348-81-5P 171348-82-6P
171348-83-7P 171348-84-8P 171348-85-9P
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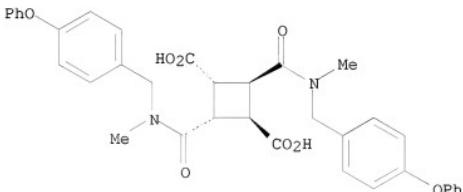
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 191284-63-6P 191284-65-8P 191284-67-0P
 191284-74-9P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of cyclobutanecarboxamide-derivative inhibitors of protein farnesyltransferase and squalene synthase)

RN 171348-74-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

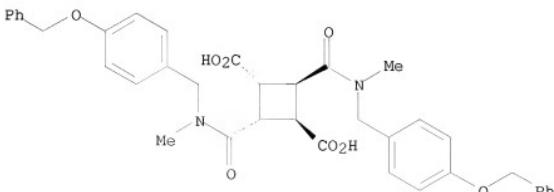
Relative stereochemistry.



RN 171348-75-7 CAPLUS

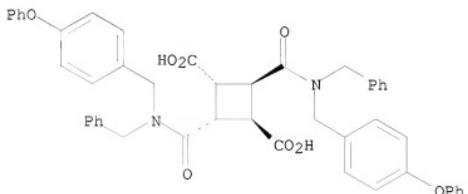
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl[(4-phenylmethoxy)phenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



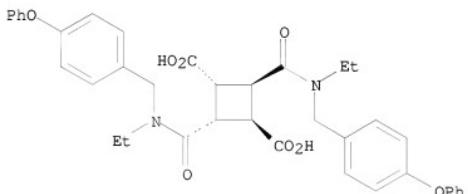
RN 171348-76-8 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



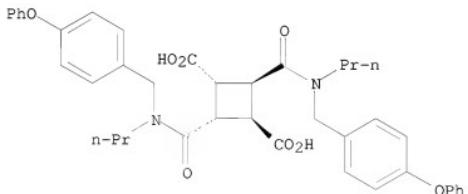
RN 171348-77-9 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[ethyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171348-78-0 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

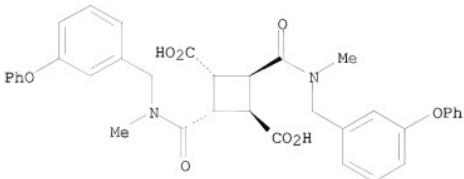
Relative stereochemistry.



RN 171348-79-1 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl[(3-phenoxyphenyl)methyl]amino]carbonyl]-,

(1 α , 2 α , 3 β , 4 β)- (9CI) (CA INDEX NAME)

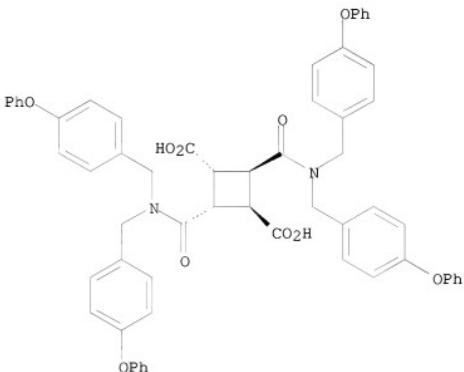
Relative stereochemistry.



RN 171348-80-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(bis[(4-phenoxyphenyl)methyl]amino)carbonyl]-,
(1 α , 2 α , 3 β , 4 β)- (CA INDEX NAME)

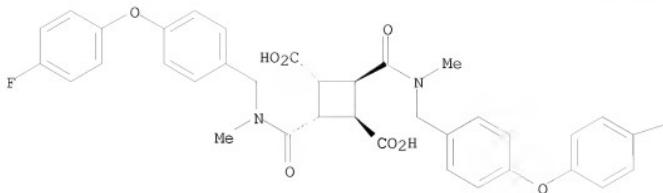
Relative stereochemistry.



RN 171348-81-5 CAPLUS

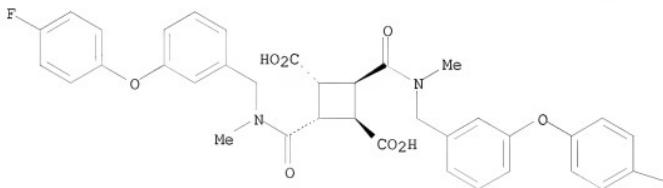
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(4-fluorophenoxy)phenyl]methyl]amino]carbonyl]-,
(1 α , 2 α , 3 β , 4 β)- (CA INDEX NAME)

Relative stereochemistry.

 $\searrow \text{F}$

RN 171348-82-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[3-(4-fluorophenoxy)phenyl]methyl]methylamino]carbonyl]-,
 $(1\alpha,2\alpha,3\beta,4\beta)-$ (CA INDEX NAME)

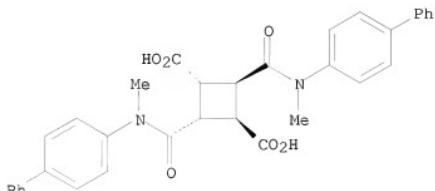
Relative stereochemistry.

 $\searrow \text{F}$

RN 171348-83-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[1,1'-biphenyl]-4-

ylmethylamino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

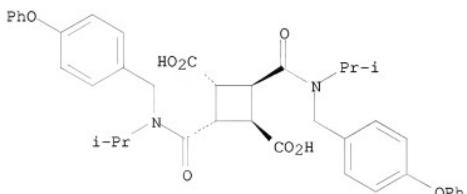
Relative stereochemistry.



RN 171348-84-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(1-methylethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

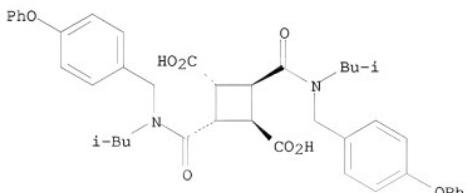
Relative stereochemistry.



RN 171348-85-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-methylpropyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

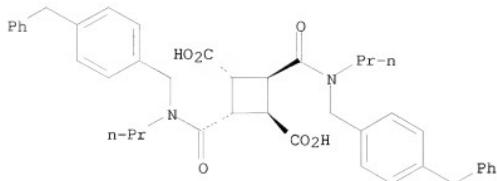
Relative stereochemistry.



RN 171348-86-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylmethyl)phenyl]methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

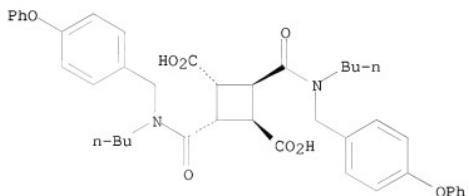
Relative stereochemistry.



RN 171348-87-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[butyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

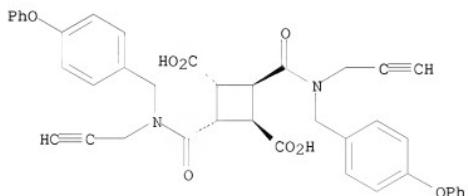
Relative stereochemistry.



RN 171348-88-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-phenoxyphenyl)methyl]-2-propynylamino]carbonyl]-, (1a,2a,3b,4b)- (9CI) (CA INDEX NAME)

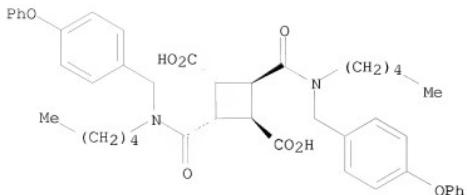
Relative stereochemistry.



RN 171348-89-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[pentyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (9CI) (CA INDEX NAME)

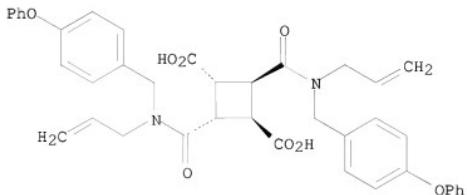
Relative stereochemistry.



RN 171348-90-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

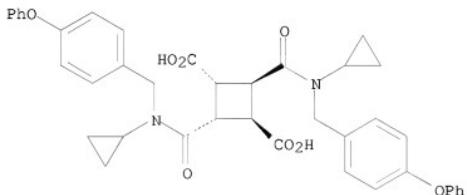
Relative stereochemistry.



RN 171348-91-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[cyclopropyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

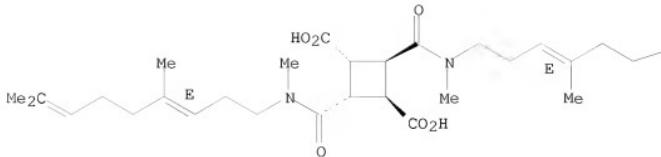


RN 171348-92-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[{(4,8-dimethyl-3,7-nonadienyl)methylamino}carbonyl]-, [1 α ,2 α (E),3 β ,4 β (E)]- (9CI) (CA INDEX NAME)

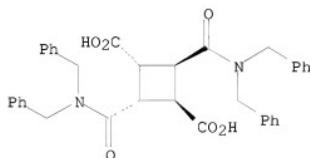
Relative stereochemistry.

Double bond geometry as shown.



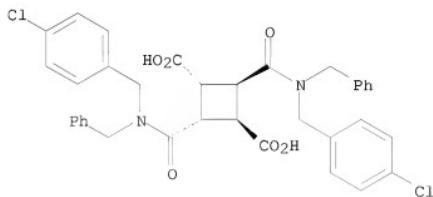
RN 171348-93-9 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[bis(phenylmethyl)amino]carbonyl]-,
 $(1\alpha,2\alpha,3\beta,4\beta)$ - (CA INDEX NAME)

Relative stereochemistry.



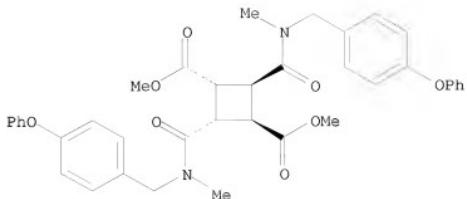
RN 171348-94-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-chlorophenyl)methyl](phenylmethyl)amino]carbonyl]-,
 $(1\alpha,2\alpha,3\beta,4\beta)$ - (CA INDEX NAME)

Relative stereochemistry.



RN 171348-95-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl(4-phenoxyphenyl)methyl]amino]carbonyl]-, dimethyl ester,
 $(1\alpha,2\alpha,3\beta,4\beta)$ - (9CI) (CA INDEX NAME)

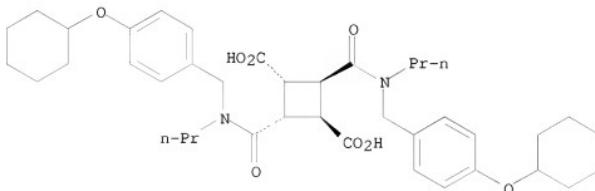
Relative stereochemistry.



RN 171348-97-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(cyclohexyloxy)phenyl]methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

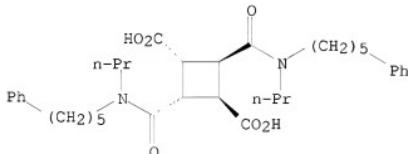
Relative stereochemistry.



RN 171348-98-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[5-(phenylpentyl)propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

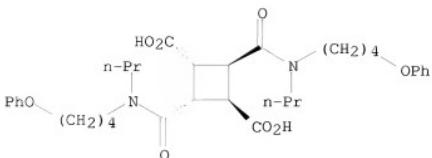
Relative stereochemistry.



RN 171348-99-5 CAPLUS

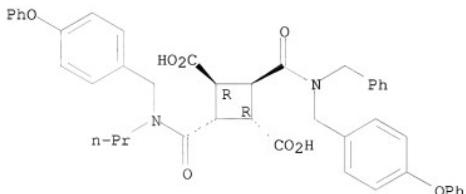
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[4-(phenoxybutyl)propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-00-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2-[{[(4-phenoxyphenyl)methyl]aminocarbonyl}-4-{[(4-phenoxyphenyl)methyl]propylamino}carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

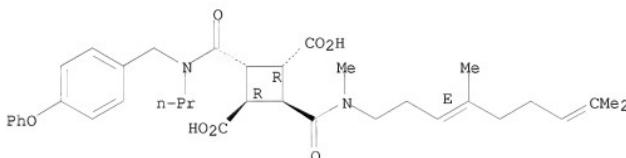
Relative stereochemistry.



RN 171349-01-2 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2-[{[(4,8-dimethyl-3,7-nonadienyl)methylamino}carbonyl]-4-{[(4-phenoxyphenyl)methyl]propylamino}carbonyl]-, stereoisomer (9CI) (CA INDEX NAME)

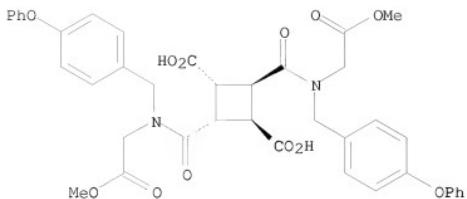
Relative stereochemistry.

Double bond geometry as shown.



RN 171349-02-3 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[{[(2-methoxy-2-oxoethyl)[(4-phenoxyphenyl)methyl]aminocarbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

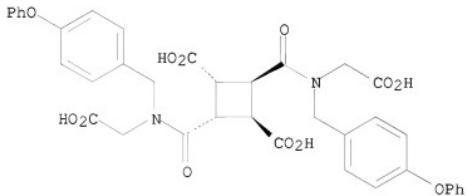
Relative stereochemistry.



RN 171349-03-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(carboxymethyl)amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

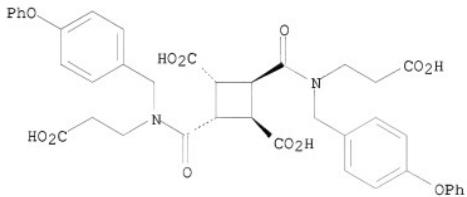
Relative stereochemistry.



RN 171349-04-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-carboxyethyl)amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

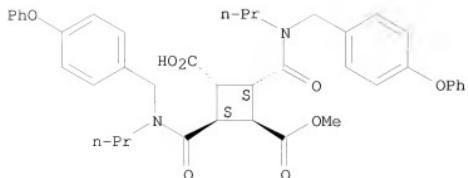
Relative stereochemistry.



RN 171349-05-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, monomethyl ester, (1a,2a,3β,4β)- (9CI) (CA INDEX NAME)

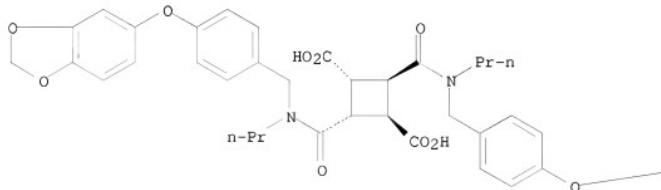
Relative stereochemistry.



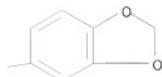
RN 171349-06-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-(1,3-benzodioxol-5-yloxy)phenyl)methyl]propylamino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

PAGE 1-A

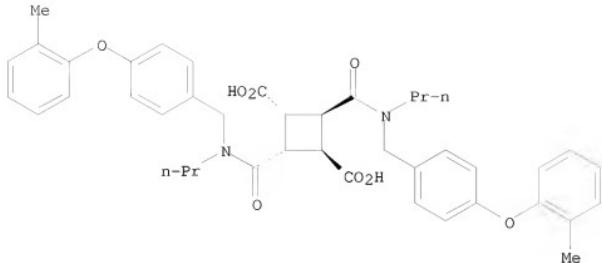


PAGE 1-B



RN 171349-09-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-(2-methylphenoxy)phenyl)methyl]propylamino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

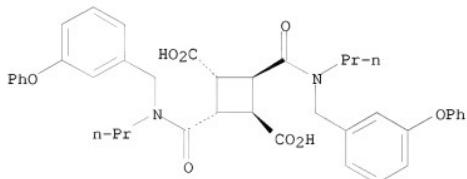
Relative stereochemistry.



RN 171349-10-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(3-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

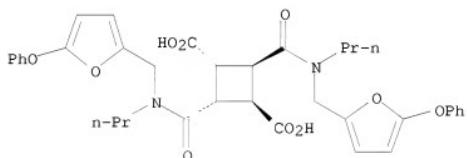
Relative stereochemistry.



RN 171349-11-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(5-phenoxy-2-furanyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

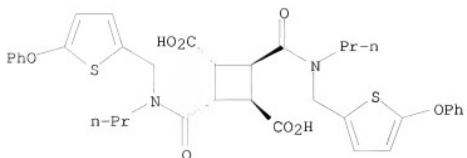
Relative stereochemistry.



RN 171349-12-5 CAPLUS

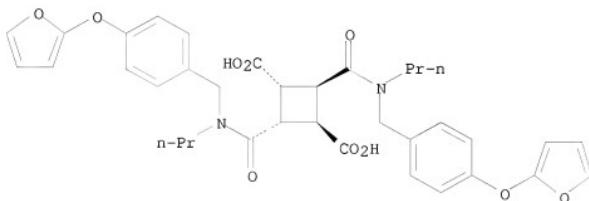
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(5-phenoxy-2-thienyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



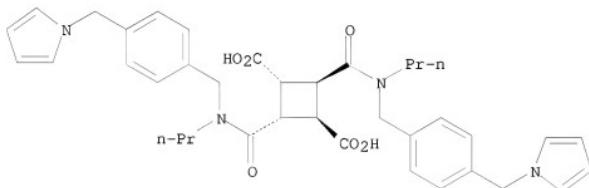
RN 171349-13-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(2-furanyloxy)phenyl]methyl]propylamino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



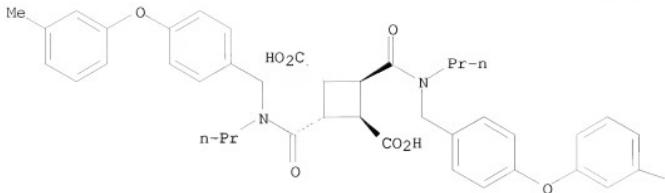
RN 171349-15-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[propyl[(4-(1H-pyrrol-1-ylmethyl)phenyl)methyl]amino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



RN 171349-16-9 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(3-methylphenoxy)phenyl]methyl]propylamino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

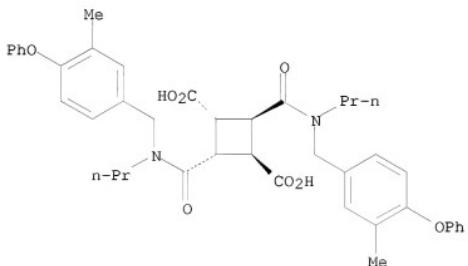


Me

RN 171349-18-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(3-methyl-4-phenoxyphenyl)methyl]propylamino]carbonyl]-,
(1a,2a,3b,4b)- (CA INDEX NAME)

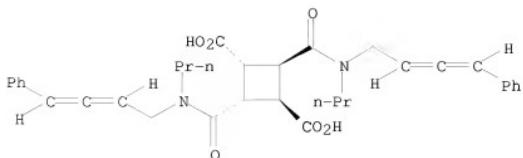
Relative stereochemistry.



RN 171349-19-2 CAPLUS

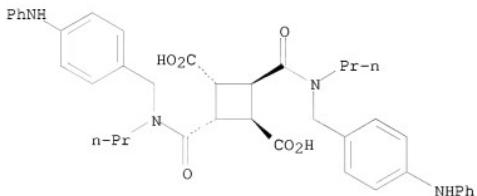
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((4-phenyl-2,3-butadien-1-yl)propylamino)carbonyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



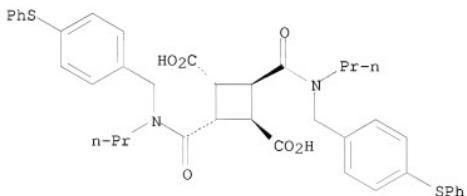
RN 171349-21-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylamino)phenyl]methyl]propylamino]carbonyl]-,
 (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



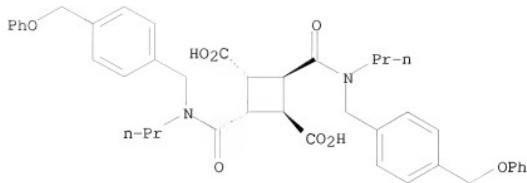
RN 171349-22-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylthio)phenyl]methyl]propylamino]carbonyl]-,
 (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



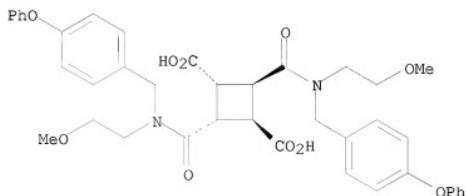
RN 171349-23-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenoxy)methyl]phenyl]methyl]propylamino]carbonyl]-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



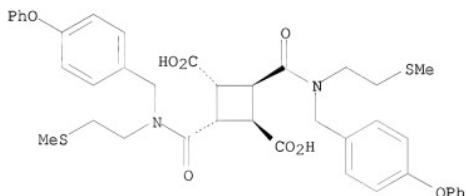
RN 171349-24-9 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((2-methoxyethyl)methyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



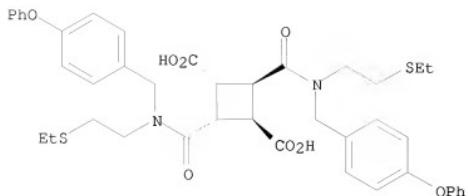
RN 171349-25-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[2-(methylthio)ethyl]((4-phenoxyphenyl)methyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-26-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[2-(ethylthio)ethyl]((4-phenoxyphenyl)methyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

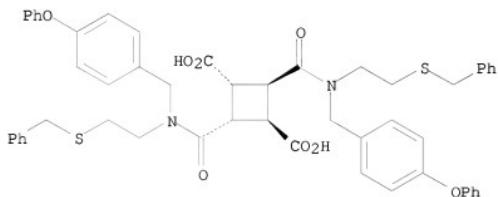
Relative stereochemistry.



RN 171349-27-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-phenoxyphenyl)methyl][2-((phenylmethyl)thio)ethyl]amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

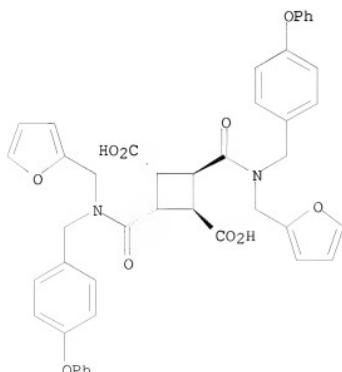
Relative stereochemistry.



RN 171349-28-3 CAPLUS

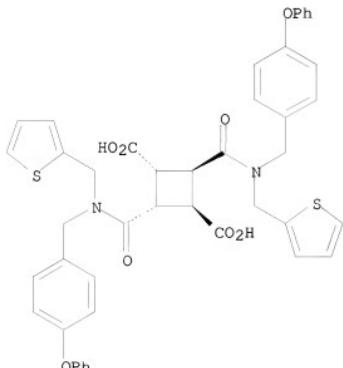
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(2-furanylmethyl][(4-phenoxyphenyl)methyl]amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



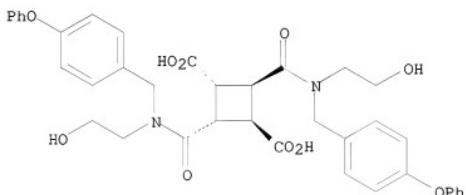
RN 171349-29-4 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl](2-thienylmethyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



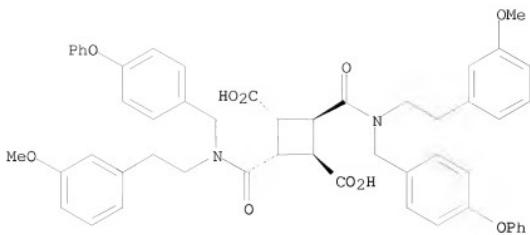
RN 171349-30-7 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-hydroxyethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-31-8 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-(3-methoxyphenyl)ethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

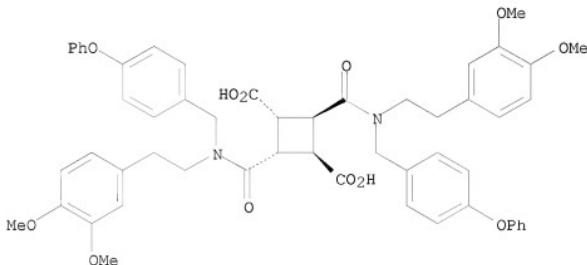
Relative stereochemistry.



RN 171349-32-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(3,4-dimethoxyphenyl)ethyl]((4-phenoxyphenyl)methyl)amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

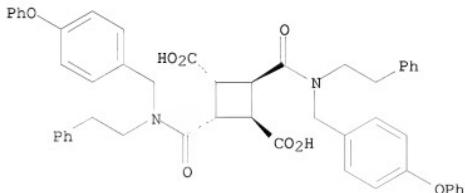
Relative stereochemistry.



RN 171349-33-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]((2-phenoxyphenyl)ethyl)amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

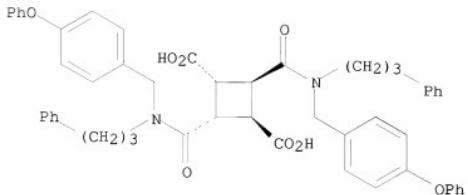
Relative stereochemistry.



RN 171349-34-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]((3-phenylpropyl)amino)carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

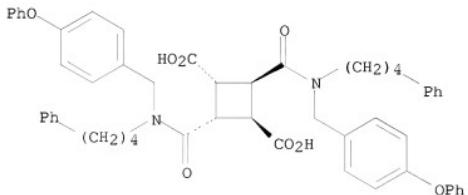
Relative stereochemistry.



RN 171349-35-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl](4-phenylbutyl)amino]carbonyl-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

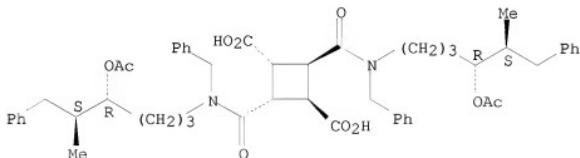
Relative stereochemistry.



RN 171349-39-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[4-(acetoxy)-5-methyl-6-phenylhexyl](phenylmethyl)amino]carbonyl-, [1 α ,2 α (4R*,5S*),3 β ,4 β (4R*,5S*)]- (9CI) (CA INDEX NAME)

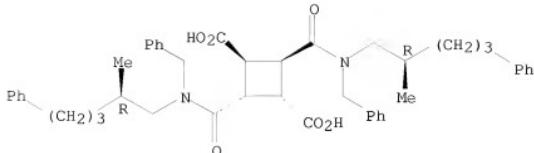
Relative stereochemistry.



RN 171349-40-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(2R)-2-methyl-5-phenylpentyl](phenylmethyl)amino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)- (CA INDEX NAME)

Absolute stereochemistry.

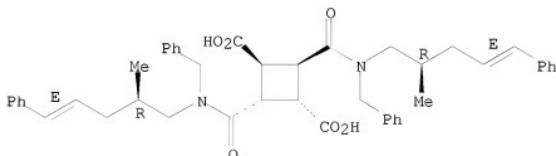


RN 171349-41-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(2R,4E)-2-methyl-5-phenyl-4-penten-1-yl](phenylmethyl)amino]carbonyl]-, (1a,2B,3B,4a)- (CA INDEX NAME)

Absolute stereochemistry.

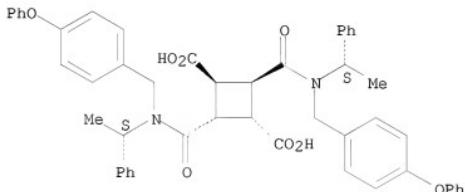
Double bond geometry as shown.



RN 171349-42-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl][(1S)-1-phenylethyl]amino]carbonyl]-, (1a,2a,3B,4B)- (CA INDEX NAME)

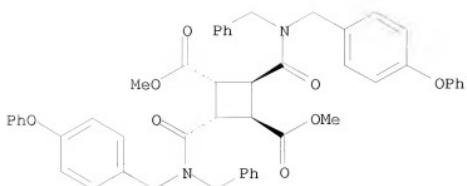
Absolute stereochemistry.



RN 171349-43-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-, dimethyl ester, (1a,2a,3B,4B)- (9CI) (CA INDEX NAME)

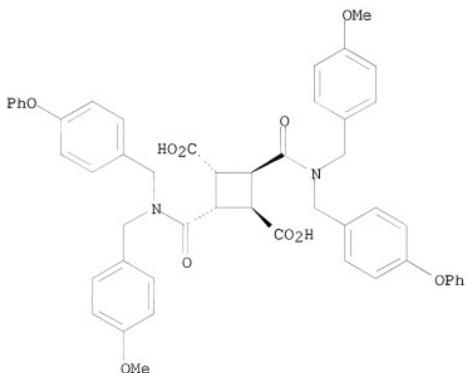
Relative stereochemistry.



RN 171349-44-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-methoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

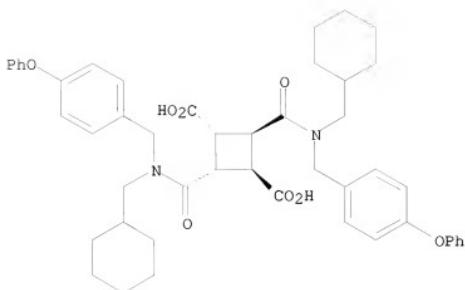
Relative stereochemistry.



RN 171349-45-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(cyclohexylmethyl)amino]carbonyl] (4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

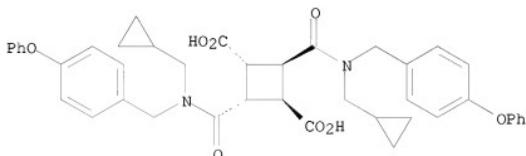
Relative stereochemistry.



RN 171349-47-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[cyclopropylmethyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

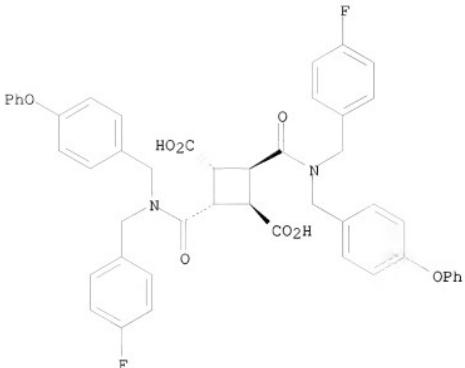
Relative stereochemistry.



RN 171349-48-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-fluorophenyl)methyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (9CI) (CA INDEX NAME)

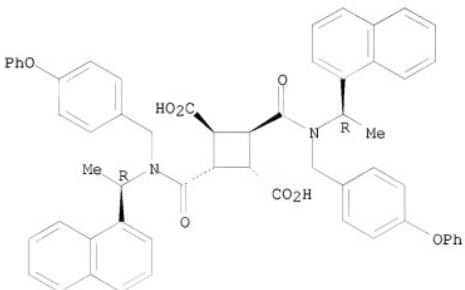
Relative stereochemistry.



RN 171349-50-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(1R)-1-(1-naphthalenyl)ethyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

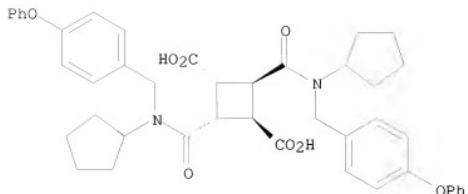
Absolute stereochemistry.



RN 171349-51-2 CAPLUS

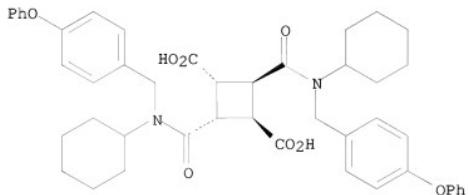
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[cyclopentyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



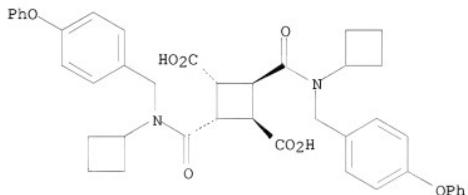
RN 171349-52-3 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclohexyl(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



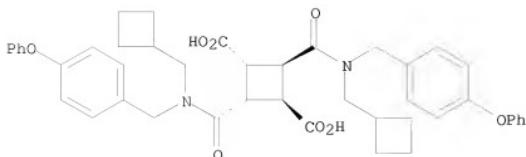
RN 171349-53-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclobutyl(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-54-5 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclobutylmethyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

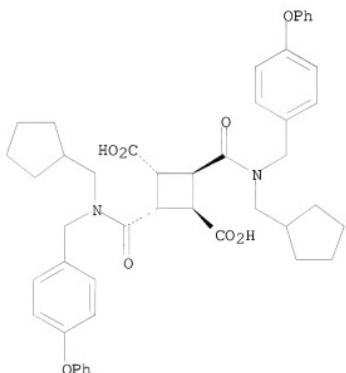
Relative stereochemistry.



RN 171349-55-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclopentylmethyl)(4-phenoxyphenyl)methyl]aminocarbonyl-,
(1a,2a,3b,4b)- (CA INDEX NAME)

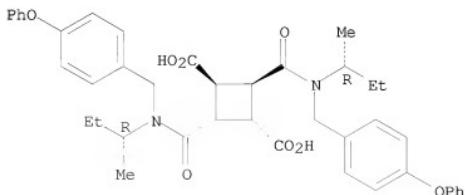
Relative stereochemistry.



RN 171349-56-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(1R)-1-methylpropyl](4-phenoxyphenyl)methyl]amino]carbonyl-,
(1a,2a,3b,4b)- (CA INDEX NAME)

Absolute stereochemistry.

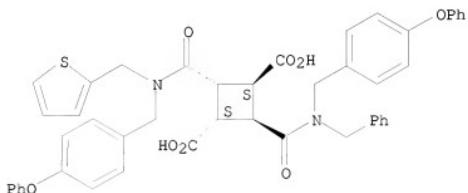


RN 171349-57-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2-[[(4-

phenoxyphenyl)methyl] (phenylmethyl)amino]carbonyl]-4-[{[(4-phenoxyphenyl)methyl](2-thienylmethyl)amino]carbonyl}-,
(1 α , 2 α , 3 β , 4 β)- (9CI) (CA INDEX NAME)

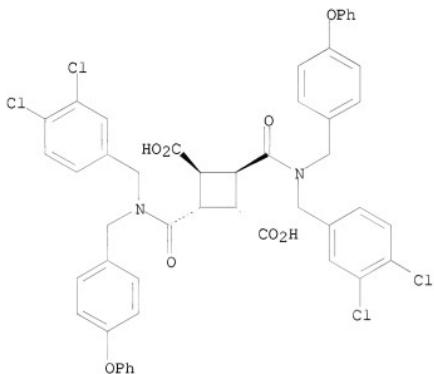
Relative stereochemistry.



RN 171349-58-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(3,4-dichlorophenyl)methyl][(4-phenoxyphenyl)methyl]amino]carbonyl}-,
(1 α , 2 α , 3 β , 4 β)- (CA INDEX NAME)

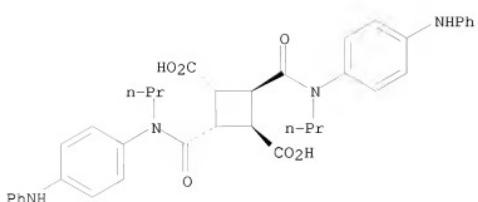
Relative stereochemistry.



RN 171483-66-2 CAPLUS

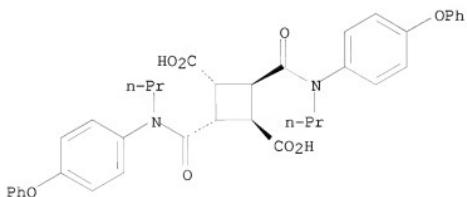
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(4-(phenylamino)phenyl)propylamino]carbonyl}-,
(1 α , 2 α , 3 β , 4 β)- (CA INDEX NAME)

Relative stereochemistry.



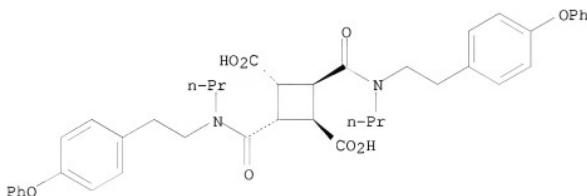
RN 171483-67-3 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)propylamino]carbonyl]-, (1a,2a,3b,4b)-
 (CA INDEX NAME)

Relative stereochemistry.



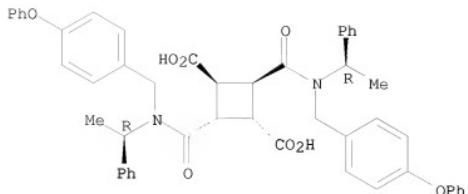
RN 171483-68-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-(4-phenoxyphenyl)ethyl)propylamino]carbonyl]-,
 (1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



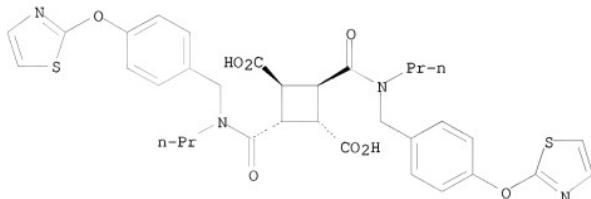
RN 171483-69-5 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl][(1R)-1-phenylethyl]amino]carbonyl]-, (1a,2b,3b,4a)- (CA INDEX NAME)

Absolute stereochemistry.



RN 191284-57-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(propyl[4-(2-thiazolyloxy)phenyl]methyl]amino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

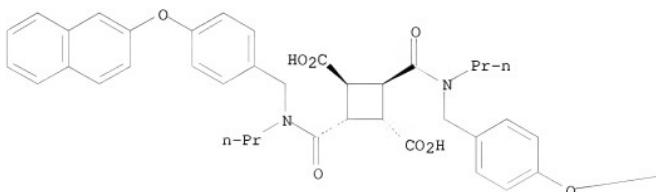
Relative stereochemistry.



RN 191284-59-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(2-naphthalenyloxy)phenyl]methyl]propylamino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

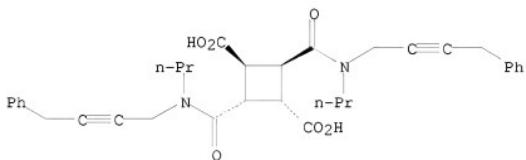
PAGE 1-A





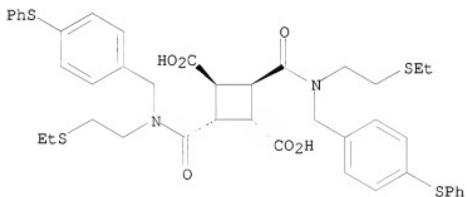
RN 191284-61-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenyl-2-butyn-1-yl)propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



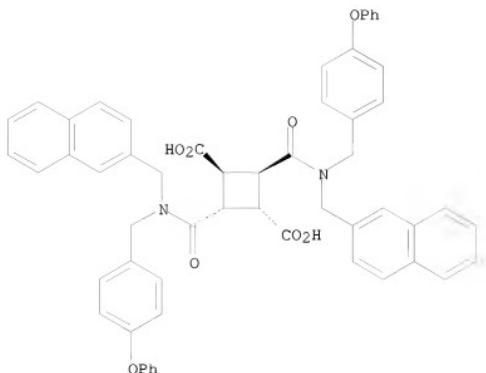
RN 191284-63-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(ethylthio)ethyl][[4-(phenylthio)phenyl]methyl]amino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)- (CA INDEX NAME)

Relative stereochemistry.



RN 191284-65-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-naphthalenylmethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

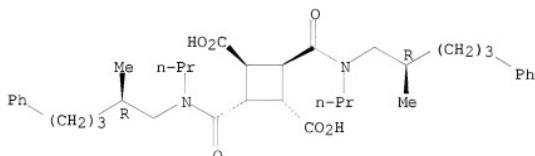
Relative stereochemistry.



RN 191284-67-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2R)-2-methyl-5-phenylpentyl]propylamino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)-
(CA INDEX NAME)

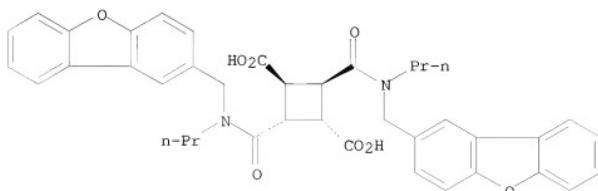
Absolute stereochemistry.



RN 191284-74-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-dibenzo[furanyl]methyl)propylamino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



IT 171349-59-0P

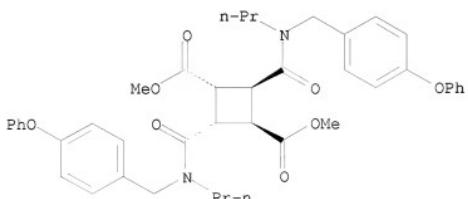
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)
(preparation of cyclobutanecarboxamide-derivative inhibitors of protein farnesyltransferase and squalene synthase)

RN 171349-59-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, dimethyl ester, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 8 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1997:48721 CAPLUS

DOCUMENT NUMBER: 126:59736

ORIGINAL REFERENCE NO.: 126:11729a,11732a

TITLE: Preparation of (4-phenoxybenzyl)aminocarbonyl-substituted cyclobutane derivatives as inhibitors of protein farnesyltransferase

INVENTOR(S): Arendsen, David L.; Rosenberg, Saul H.; Rockway, Todd W.; Stein, Herman H.; Fung, Anthony K. L.

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: PCT Int. Appl., 309 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

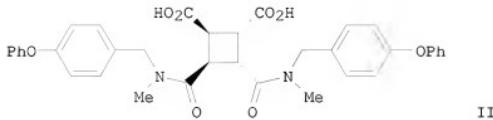
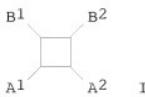
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|------------|
| WO 9634850 | A1 | 19961107 | WO 1996-US6156 | 19960502 |
| W: AU, CA, JP, KR, MX | | | | |
| RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| AU 9657227 | A | 19961121 | AU 1996-57227 | 19960502 |
| PRIORITY APPLN. INFO.: | | | US 1995-433718 | A 19950503 |
| | | | US 1995-564836 | A 19951129 |
| | | | US 1996-633205 | A 19960426 |
| | | | WO 1996-US6156 | W 19960502 |

OTHER SOURCE(S): MARPAT 126:59736
GI



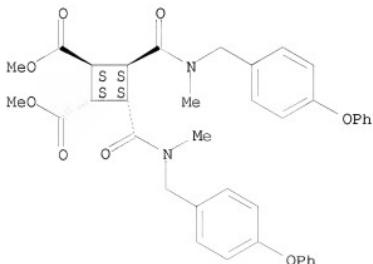
AB The title compds. [I; A1, A2 = XC(O)G, XC(S)G (wherein X = a bond, CH₂, O, etc.; G = mono- or disubstituted NH₂, substituted OH, SH); B1, B2 = CH₂OH, CH₂CH₂OH, CHO, etc.], useful for inhibiting squalene synthetase and cholesterol biosynthesis, and treating hyperlipidemia, atherosclerosis and a fungal infection, were prepared Thus, reaction of 1,2,3,4-cyclobutanecarboxylic dianhydride with N-methyl-N-(4-phenoxybenzyl)amine in the presence of Et₃N in DMF afforded 28% (1a, 2β, 3β, 4α)-II which showed 54% inhibition of squalene synthetase *in vitro* at 10 μM.

IT 169942-41-0P 169942-53-4P 169942-55-6P
 169942-56-7P 169942-57-8P 169942-58-9P
 169942-65-8P 169942-67-0P 169942-70-5P
 185209-33-0P 185209-34-1P 185209-36-3P
 185209-37-4P 185209-38-5P 185209-39-6P
 185209-40-9P 185209-41-0P 185209-42-1P
 185209-43-2P 185209-44-3P 185209-64-7P
 185209-78-3P 185253-92-3P 185254-05-1P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of N-(4-phenoxybenzyl)aminocarbonyl-substituted cyclobutane derivs. as inhibitors of protein farnesyltransferase)

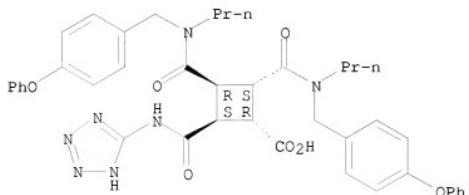
RN 169942-41-0 **CN** 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(methyl[(4-phenoxyphenyl)methyl]amino)carbonyl]-, dimethyl ester, (1R,2R,3R,4R)-rel-(9CI) (CA INDEX NAME)

Relative stereochemistry.



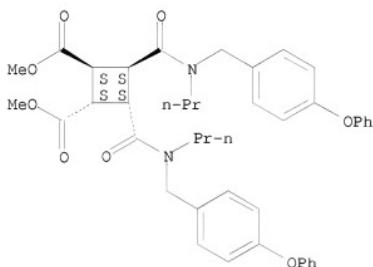
RN 169942-53-4 CAPLUS
CN Cyclobutanscarboxylic acid, 2,3-bis[[(4-
phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1*H*-tetrazol-5-
ylamino)carbonyl]-, (1*R*,2*S*,3*R*,4*S*)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



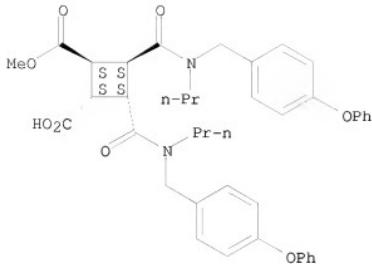
RN 169942-55-6 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-
phenoxyphenyl)methyl]propylamino]carbonyl-, dimethyl ester,
(1*R*,2*R*,3*R*,4*R*)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



RN 169942-56-7 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-
phenoxyphenyl)methyl]propylamino]carbonyl-, monomethyl ester,
(1*R*,2*R*,3*R*,4*R*)-rel- (9CI) (CA INDEX NAME)

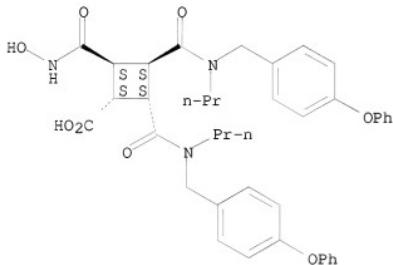
Relative stereochemistry.



RN 169942-57-8 CAPLUS

CN Cyclobutane carboxylic acid, 2-[{(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

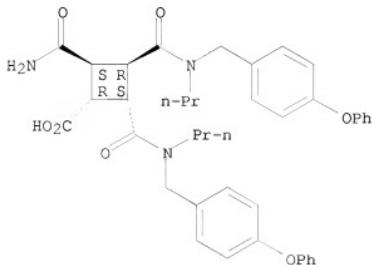
Relative stereochemistry.



RN 169942-58-9 CAPLUS

CN Cyclobutane carboxylic acid, 2-[{(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

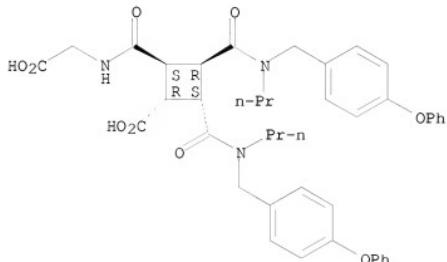
Relative stereochemistry.



RN 169942-65-8 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(carboxymethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel-(CA INDEX NAME)

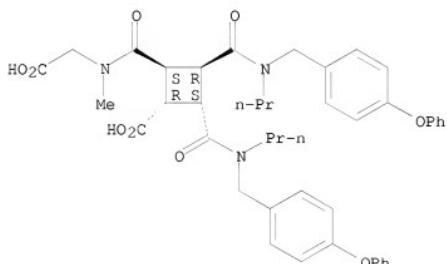
Relative stereochemistry.



RN 169942-67-0 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(carboxymethyl)methylamino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel-(CA INDEX NAME)

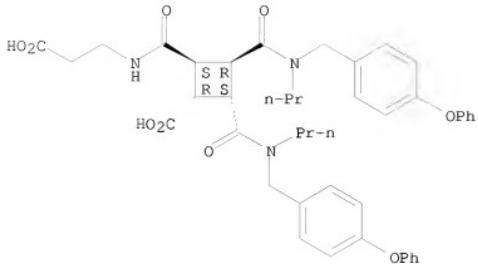
Relative stereochemistry.



RN 169942-70-5 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(2-carboxyethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel-(CA INDEX NAME)

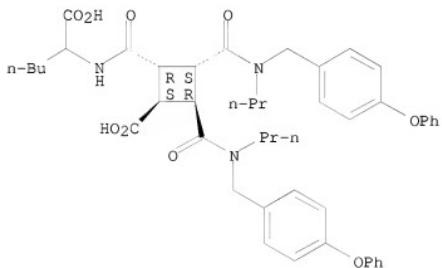
Relative stereochemistry.



RN 185209-33-0 CAPLUS

CN Cyclobutane carboxylic acid, 2-[(1-carboxypentyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

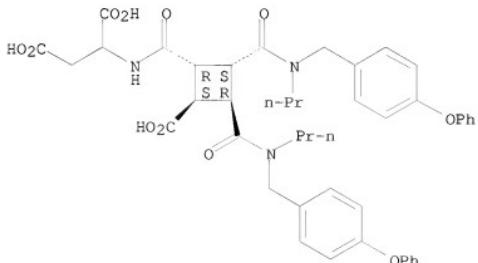
Relative stereochemistry.



RN 185209-34-1 CAPLUS

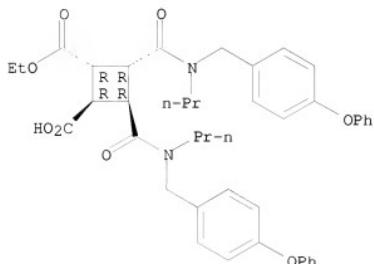
CN Aspartic acid, N-[(1R,2S,3R,4S)-2-carboxy-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]cyclobutyl]carbonyl-, rel- (CA INDEX NAME)

Relative stereochemistry.



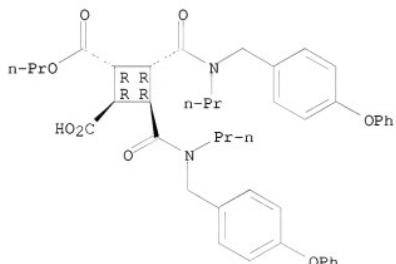
RN 185209-36-3 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-ethyl ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



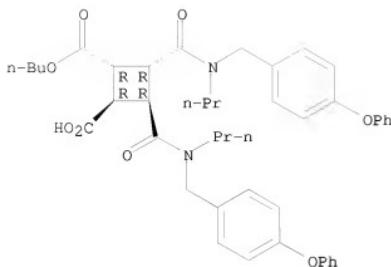
RN 185209-37-4 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-propyl ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 185209-38-5 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-butyl ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

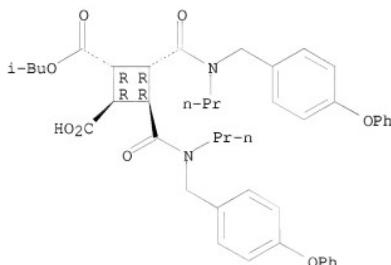
Relative stereochemistry.



RN 185209-39-6 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, mono(2-methylpropyl) ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

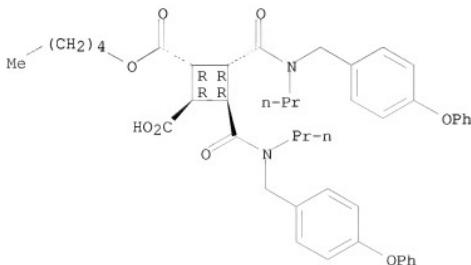
Relative stereochemistry.



RN 185209-40-9 CAPLUS

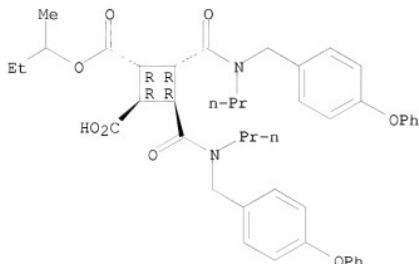
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, 1-pentyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



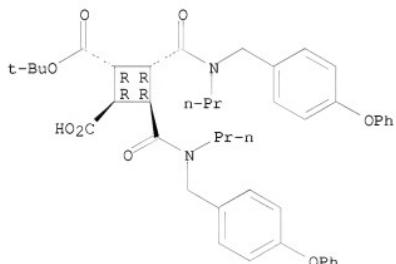
RN 185209-41-0 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-(1-methylpropyl) ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



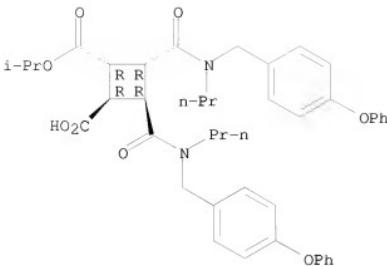
RN 185209-42-1 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-(1,1-dimethylethyl) ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 185209-43-2 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-(1-methylethyl) ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

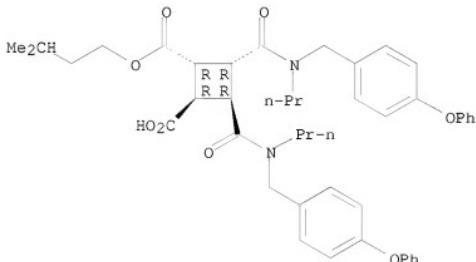
Relative stereochemistry.



RN 185209-44-3 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, mono(3-methylbutyl) ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

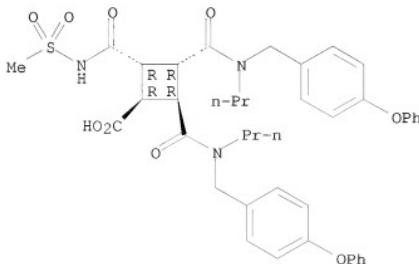
Relative stereochemistry.



RN 185209-64-7 CAPLUS

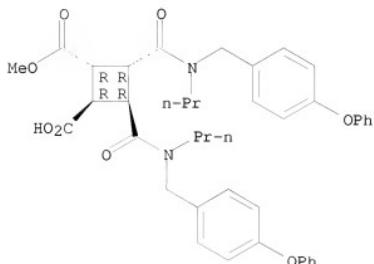
CN Cyclobutanecarboxylic acid, 2-[(methylsulfonyl)amino]carbonyl-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



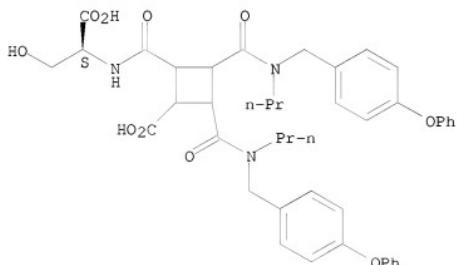
RN 185209-78-3 CAPLUS
CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-methyl ester,
(1R,2R,3R,4R)-rel-(-) (CA INDEX NAME)

Rotation (-). Absolute stereochemistry unknown.



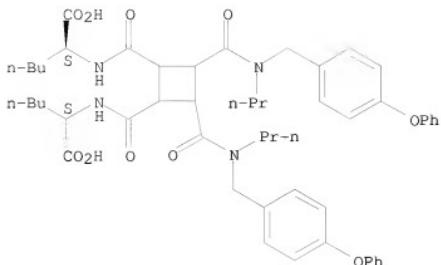
RN 185253-92-3 CAPLUS
CN Cyclobutanecarboxylic acid, 2-[[[(1S)-1-carboxy-2-hydroxyethyl]amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl- (CA INDEX NAME)

Absolute stereochemistry.



RN 185254-05-1 CAPLUS
CN L-Norleucine, N,N'-[3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-1,2-cyclobutanediyl]dicarbonyl]bis- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



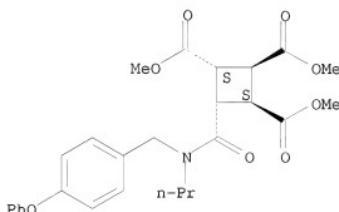
IT 169942-85-2P 169943-03-7P 169943-05-9P
 169943-06-0P 169943-07-1P 169943-39-9P
 170207-72-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of N-(4-phenoxybenzyl)aminocarbonyl-substituted cyclobutane derivs. as inhibitors of protein farnesyltransferase)

RN 169942-85-2 CAPLUS

CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, trimethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

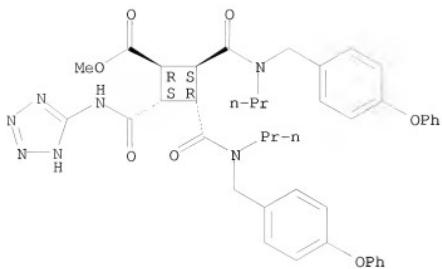
Relative stereochemistry.



RN 169943-03-7 CAPLUS

CN Cyclobutanecarboxylic acid, 2,3-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1H-tetrazol-5-ylamino)carbonyl]-, methyl ester, (1R,2S,3R,4S)-rel- (9CI) (CA INDEX NAME)

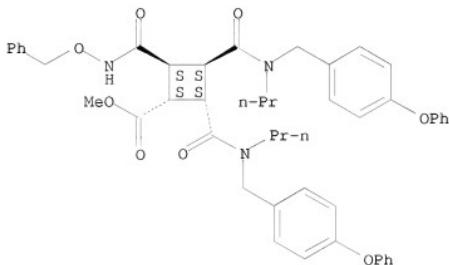
Relative stereochemistry.



RN 169943-05-9 CAPLUS

CN Cyclobutanecarboxylic acid, 2,3-bis[[(4-
phenoxyphenyl)methylpropylamino]carbonyl]-4-
[(phenylmethoxy)amino]carbonyl-, methyl ester, (1R,2R,3R,4R)-rel- (CA
INDEX NAME)

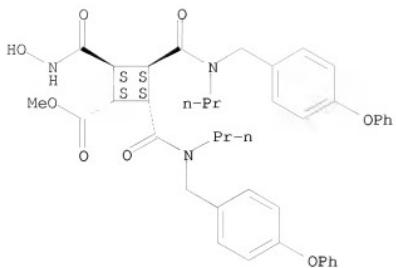
Relative stereochemistry.



RN 169943-06-0 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(hydroxyamino)carbonyl]-3,4-bis[[(4-
phenoxyphenyl)methylpropylamino]carbonyl]-, methyl ester,
(1R,2R,3R,4R)-rel- (CA INDEX NAME)

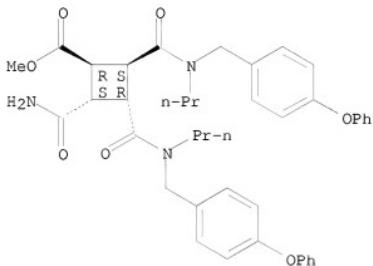
Relative stereochemistry.



RN 169943-07-1 CAPLUS

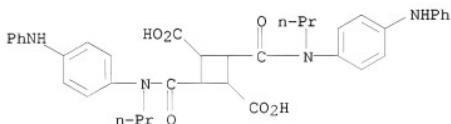
CN Cyclobutane carboxylic acid, 2-(aminocarbonyl)-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, methyl ester, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 169943-39-9 CAPLUS

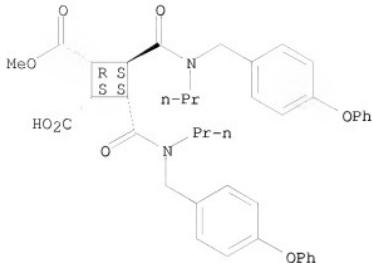
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylamino)phenyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 170207-72-4 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, monomethyl ester, (1R,2S,3S,4S)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

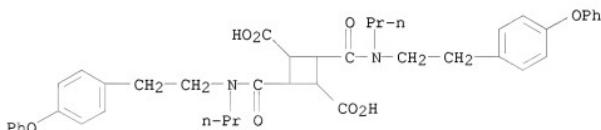


IT 169943-31-1P 169943-32-2P 185210-39-3P
 185210-40-6P 185210-41-7P 185210-42-8P
 185210-43-9P 185210-44-0P 185210-45-1P
 185210-46-2P 185210-47-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of N-(4-phenoxybenzyl)aminocarbonyl-substituted cyclobutane
 derivs. as inhibitors of protein farnesyltransferase)

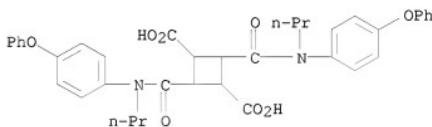
RN 169943-31-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(2-(4-
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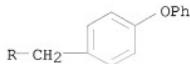
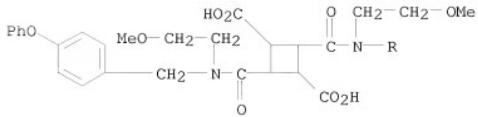
RN 169943-32-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(4-
 phenoxyphenyl)propylamino]carbonyl}- (CA INDEX NAME)



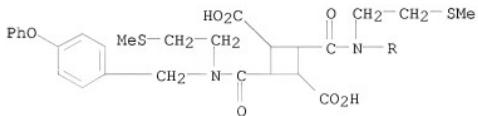
RN 185210-39-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(2-methoxyethyl)(4-
 phenoxyphenyl)methyl]amino}carbonyl- (CA INDEX NAME)



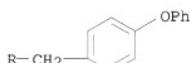
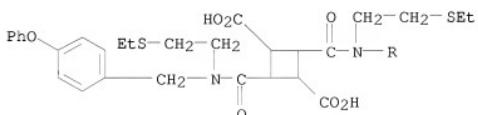
RN 185210-40-6 CAPLUS

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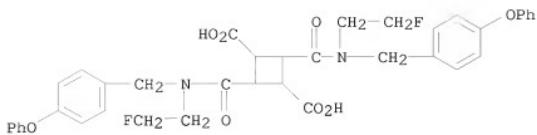
RN 185210-41-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(2-(ethylthio)ethyl][(4-phenoxyphenyl)methyl]amino]carbonyl}- (CA INDEX NAME)



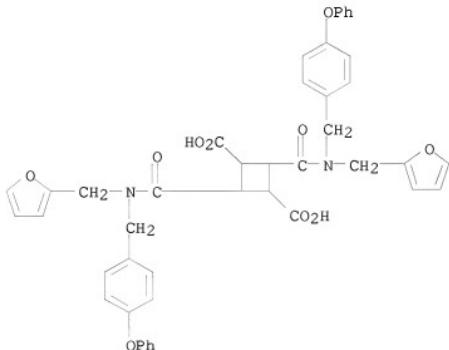
RN 185210-42-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(2-fluoroethyl][(4-phenoxyphenyl)methyl]amino]carbonyl}- (CA INDEX NAME)



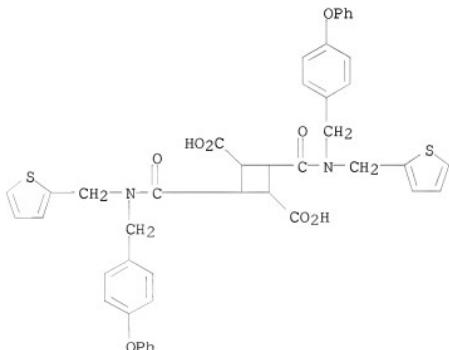
RN 185210-43-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-furanylmethyl)amino]carbonyl]- (4-phenoxyphenyl)methyl]- (CA INDEX NAME)



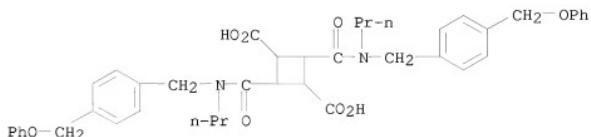
RN 185210-44-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl](2-thienylmethyl)amino]carbonyl]- (CA INDEX NAME)



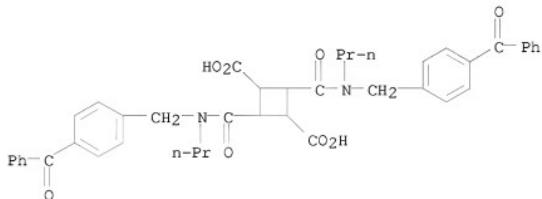
RN 185210-45-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-(phenoxy)methyl)phenyl]methyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 185210-46-2 CAPLUS

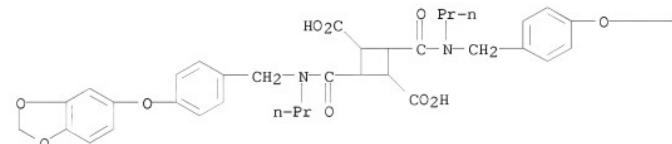
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-benzoylphenyl)methyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 185210-47-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-(1,3-benzodioxol-5-yloxy)phenyl)methyl]propylamino]carbonyl]- (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



REFERENCE COUNT:

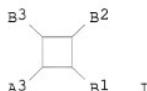
2

THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ACCESSION NUMBER: 1997:41540 CAPLUS
 DOCUMENT NUMBER: 126:59749
 ORIGINAL REFERENCE NO.: 126:11733a,11736a
 TITLE: Preparation of cyclobutane-derivative inhibitors of squalene synthase and protein farnesyl transferase
 INVENTOR(S): Arendsen, David L.; Baker, William R.; Fakhoury, Stephen A.; Fung, K. L. Anthony; Garvey, David S.; McClellan, William J.; O'Connor, Stephen J.; Prasad, Rajnandan N.; Rockway, Todd W.; et al.
 PATENT ASSIGNEE(S): Abbott Laboratories, USA
 SOURCE: PCT Int. Appl., 133 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|------------|
| WO 9633159 | A1 | 19961024 | WO 1996-US5529 | 19960418 |
| W: CA, JP, MX
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| US 5831115 | A | 19981103 | US 1996-626859 | 19960412 |
| EP 821665 | A1 | 19980204 | EP 1996-912978 | 19960418 |
| EP 821665 | B1 | 20011004 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI | | | | |
| JP 11504017 | T | 19990406 | JP 1996-531980 | 19960418 |
| AT 206390 | T | 20011015 | AT 1996-912978 | 19960418 |
| PRIORITY APPLN. INFO.: | | | | |
| | | | US 1995-426553 | A 19950421 |
| | | | US 1995-428357 | A 19950421 |
| | | | US 1995-564524 | A 19951129 |
| | | | US 1996-626859 | A 19960412 |
| | | | WO 1996-US5529 | W 19960418 |

OTHER SOURCE(S): MARPAT 126:59749
 GI



AB The title compds (I; permitted substituent values are defined in the disclosure), useful for inhibiting protein farnesyl transferase and the farnesylation of the oncogene protein Ras, or for inhibiting de-novo squalene production resulting in the inhibition of cholesterol biosynthesis, are prepared. Thus, (1a,2b,3b,4a)-1-[N-benzyl-N-[(4S,5S)-(4-hydroxy-5-methyl)-6-phenylhexyl]aminocarbonyl]cyclobutane-2,3,4-tricarboxylic acid, prepared from propionaldehyde in 10 steps, demonstrated a 92% inhibition of protein farnesyl transferase at 1µM.

IT 184228-21-5P 184228-25-9P 184228-39-5P

184488-03-7P

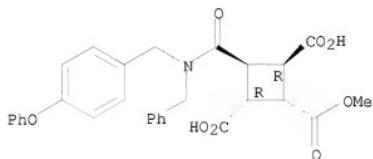
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(preparation of cyclobutane-derivative inhibitors of squalene synthase and protein farnesyl transferase)

RN 184228-21-5 CAPLUS

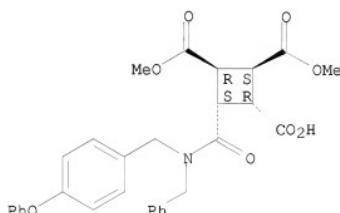
CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-, 2-methyl
 ester, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

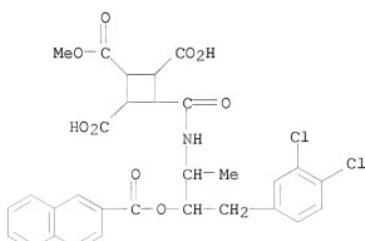


RN 184228-25-9 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-, 1,2-dimethyl
 ester, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

Relative stereochemistry.

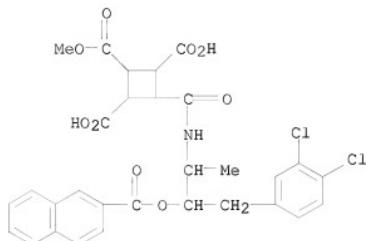


RN 184228-39-5 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,
 4-[[[(1S,2R)-3-(3,4-dichlorophenyl)-1-methyl-2-[(2-naphthalenylcarbonyl)-oxy]propyl]amino]carbonyl]-, 2-methyl ester,
 stereoisomer (9CI) (CA INDEX NAME)



RN 184488-03-7 CAPLUS
 CN 1,2,3-Cyclobutanetricarboxylic acid,

4-[[[(1S,2R)-3-(3,4-dichlorophenyl)-1-methyl-2-[(2-naphthalenylcarbonyl)oxy]propyl]amino]carbonyl]-, 2-methyl ester,
stereoisomer (9CI) (CA INDEX NAME)



REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 10 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1995:978682 CAPLUS

DOCUMENT NUMBER: 124:29303

ORIGINAL REFERENCE NO.: 124:5623a,5626a

TITLE: Cyclobutane derivatives and their use as inhibitors of protein farnesyltransferase and squalene synthase

INVENTOR(S): Stein, Herman H.; Baker, William R.; Fung, Anthony K. L.; Rosenberg, Saul H.; Rockway, Todd W.; Fakhoury, Stephen A.; Garvey, David S.; Donner, B. Gregory; McClellan, William J.; et al.

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: PCT Int. Appl., 170 pp.

CODEN: PIXXD2

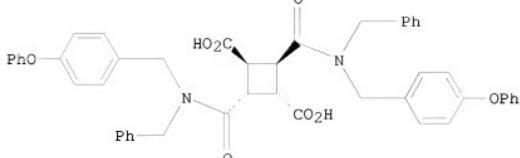
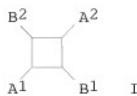
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|--------|-----------|-----------------|------------|
| ----- | ----- | ----- | ----- | ----- |
| WO 9521815 | A1 | 19950817 | WO 1995-US1360 | 19950201 |
| W: CA, JP, MX | | | | |
| RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| PRIORITY APPLN. INFO.: | | | US 1994-194366 | A 19940209 |
| OTHER SOURCE(S): | MARPAT | 124:29303 | | |
| GI | | | | |



II

AB The invention provides compds. I [A₁, A₂ = CONR₁R₂, (CH₂)_nNR₁R₂, NHCONR₁R₂, CO₂R; R₁ = H, alkyl, aryl, aralkyl, etc.; R₂ = aryl, aralkyl, alkenyl, etc.; R₄ = aryl, aralkyl, etc.; B₁, B₂ = CH₂OH, CH:NOH, WR₅, CO₂H and derivs., etc.; W = bond, alk(en)ylene, CONH, NHCONH; R₅ = various (un)substituted heterocyclics, etc.] and their pharmaceutically acceptable salts. I inhibit protein farnesyltransferase and the farnesylation of the oncogene protein Ras, as well as de novo squalene production, resulting in the inhibition of cholesterol biosynthesis. For example, reaction of trans-1,2,3,4-cyclobutanetetracarboxylic acid dianhydride with 4-(PhO)C₆H₄CH₂NHCH₂Ph in THF gave, after chromatog. separation of isomers, title compound II in 32% yield. II gave 98% inhibition of rat brain protein farnesyltransferase in vitro at 10 μM. Over 100 synthetic examples are given, plus data for inhibition of the title enzymes in vitro by selected compds.

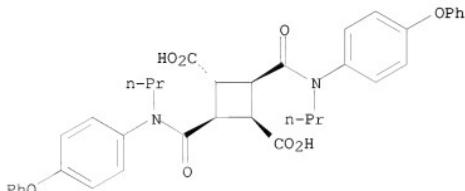
IT 171483-72-0P 171483-73-1P 171483-74-2P
171483-75-3P 171483-76-4P 171483-77-5P
171483-78-6P 171483-79-7P

RL: BYP (Byproduct); PREP (Preparation)
(byproduct; preparation of cyclobutane derivs. as inhibitors of protein farnesyltransferase and squalene synthase)

RN 171483-72-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((4-phenoxypyphenyl)propylamino]carbonyl]-, (1α,2β,3β,4β)-
(CA INDEX NAME)

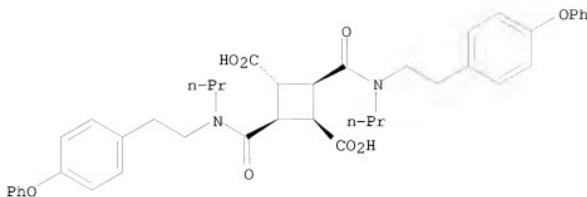
Relative stereochemistry.



RN 171483-73-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(4-phenoxypyphenyl)ethyl]propylamino]carbonyl]-,
(1α,2β,3β,4β)- (CA INDEX NAME)

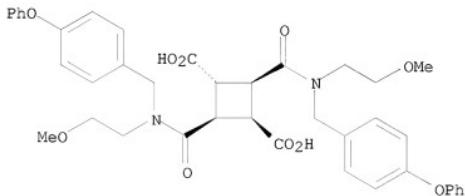
Relative stereochemistry.



RN 171483-74-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-methoxyethyl)amino]carbonyl-,
(1a,2a,3b,4a)- (CA INDEX NAME)

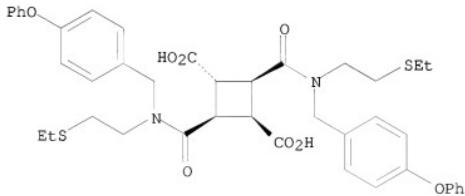
Relative stereochemistry.



RN 171483-75-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(ethylthio)ethyl]amino]carbonyl-,
(1a,2a,3b,4a)- (CA INDEX NAME)

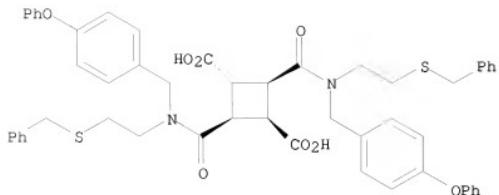
Relative stereochemistry.



RN 171483-76-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]thio]ethyl]amino]carbonyl-,
(1a,2a,3b,4a)- (9CI) (CA INDEX NAME)

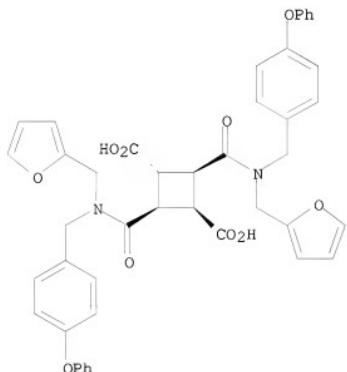
Relative stereochemistry.



RN 171483-77-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((2-furanylmethyl)amino)carbonyl]-(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 α)- (9CI) (CA INDEX NAME)

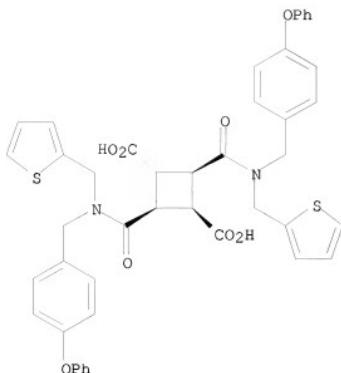
Relative stereochemistry.



RN 171483-78-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl](2-thienylmethyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 α)- (CA INDEX NAME)

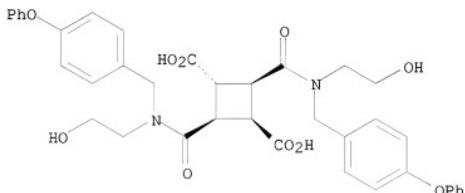
Relative stereochemistry.



RN 171483-79-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-hydroxyethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 α)- (CA INDEX NAME)

Relative stereochemistry.



IT 169942-85-2P 171349-59-0P

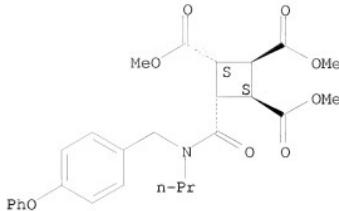
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(intermediate; preparation of cyclobutane derivs. as inhibitors of protein farnesyltransferase and squalene synthase)

RN 169942-85-2 CAPLUS

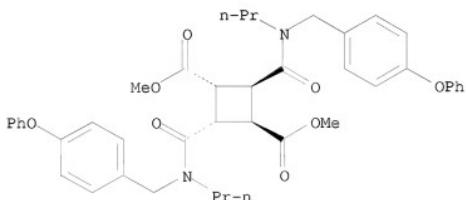
CN 1,2,3-Cyclobutanetricarboxylic acid, 4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, trimethyl ester, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



RN 171349-59-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, dimethyl ester, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

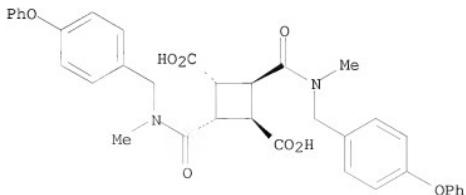


IT 171348-74-6P 171348-76-8P 171348-78-0P
 171349-05-6P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (preparation of cyclobutane derivs. as inhibitors of protein farnesyltransferase and squalene synthase)

RN 171348-74-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

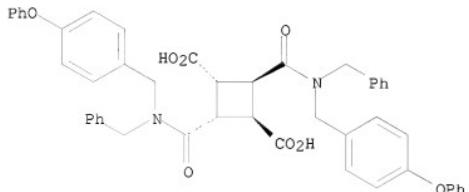
Relative stereochemistry.



RN 171348-76-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

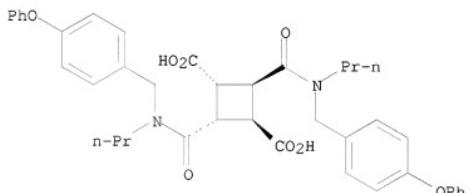
Relative stereochemistry.



RN 171348-78-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

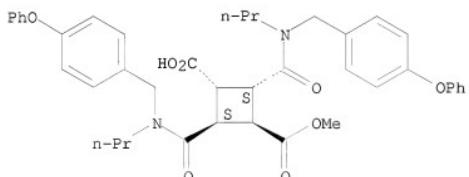
Relative stereochemistry.



RN 171349-05-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, monomethyl ester, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



IT 171348-75-7P 171348-77-9P 171348-79-1P
171348-80-4P 171348-81-5P 171348-82-6P
171348-83-7P 171348-84-8P 171348-85-9P
171348-86-0P 171348-87-1P 171348-88-2P
171348-89-3P 171348-90-6P 171348-91-7P

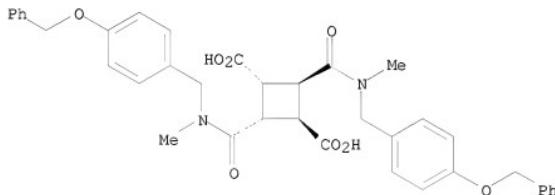
171348-92-8P 171348-93-9P 171348-94-0P
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 171483-68-4P 171483-69-5P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of cyclobutane derivs. as inhibitors of protein farnesyltransferase and squalene synthase)

RN 171348-75-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[methyl[(4-phenylmethoxy)phenyl]methyl]amino]carbonyl}-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

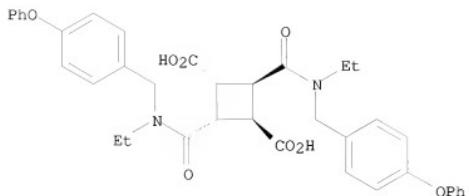
Relative stereochemistry.



RN 171348-77-9 CAPLUS

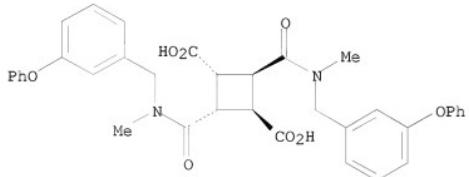
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[ethyl[(4-phenoxyphenyl)methyl]amino]carbonyl}-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



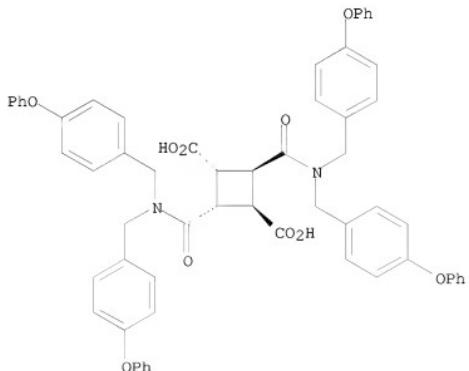
RN 171348-79-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(methyl(3-phenoxyphenyl)methyl)amino]carbonyl-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171348-80-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(bis[(4-phenoxyphenyl)methyl]amino)carbonyl]-,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

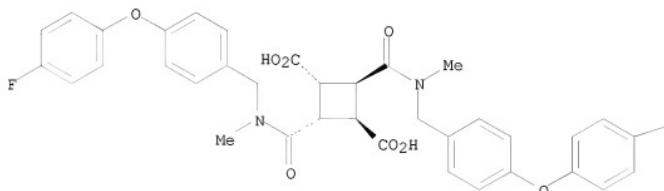


RN 171348-81-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(4-fluorophenoxy)phenyl]methyl]methylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

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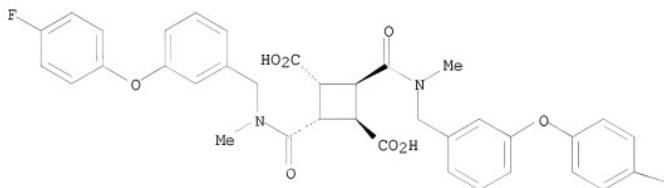
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RN 171348-82-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[3-(4-fluorophenoxy)phenyl]methyl]methylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

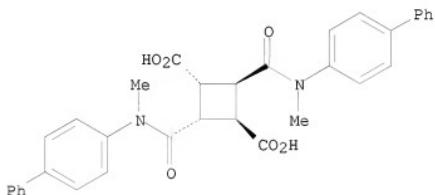
PAGE 1-A



\swarrow F

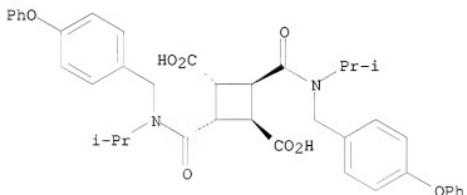
RN 171348-83-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[([1,1'-biphenyl]-4-ylmethylamino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



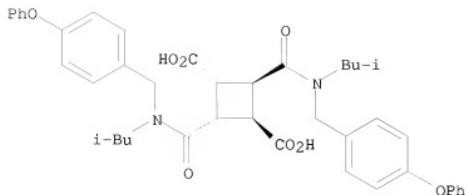
RN 171348-84-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(1-methylethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



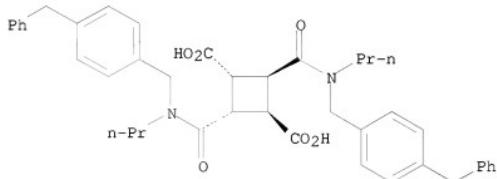
RN 171348-85-9 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-methylpropyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



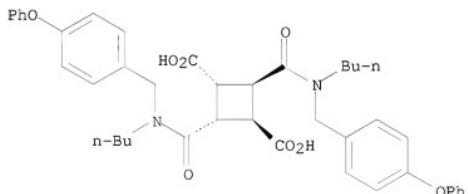
RN 171348-86-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylmethyl)phenyl]methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



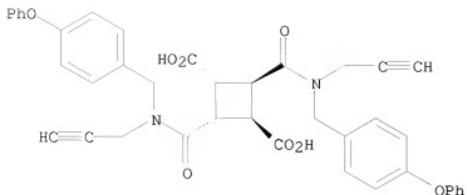
RN 171348-87-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[butyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



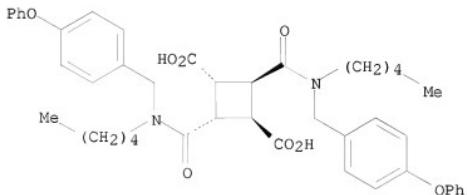
RN 171348-88-2 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]2-propynylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



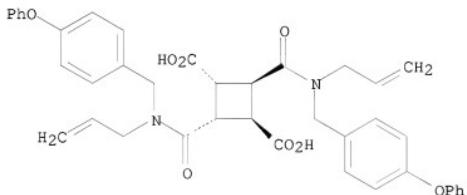
RN 171348-89-3 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(pentyl[(4-phenoxyphenyl)methyl]amino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



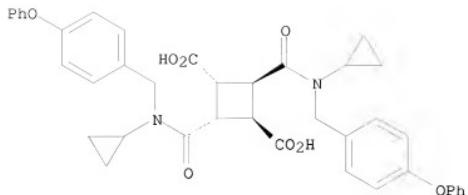
RN 171348-90-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]-2-propen-1-ylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171348-91-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclopropyl[(4-phenoxyphenyl)methyl]amino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

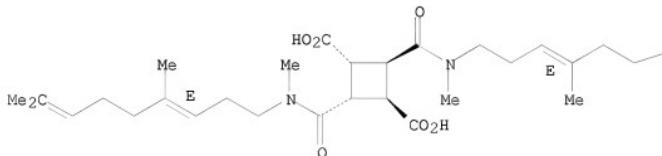


RN 171348-92-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4,8-dimethyl-3,7-nonadienyl)methylamino]carbonyl]-, [1 α ,2 α (E),3 β ,4 β (E)]- (9CI) (CA INDEX NAME)

Relative stereochemistry.
Double bond geometry as shown.

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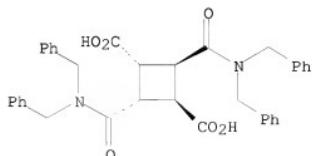
PAGE 1-B



RN 171348-93-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[bis(phenylmethyl)amino]carbonyl-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

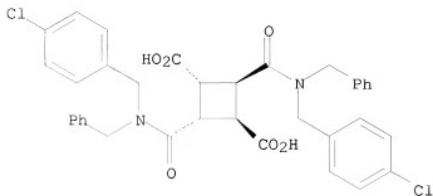


RN 171348-94-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-chlorophenyl)methyl](phenylmethyl)amino]carbonyl]-,

(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

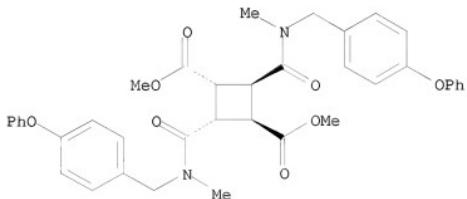
Relative stereochemistry.



RN 171348-95-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[methyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, dimethyl ester,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

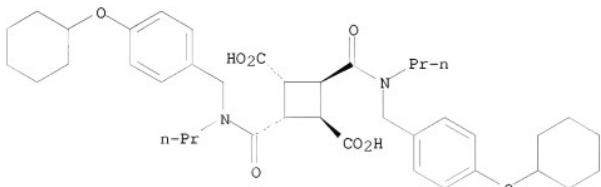
Relative stereochemistry.



RN 171348-97-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(cyclohexyloxy)phenyl]methyl]propylamino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

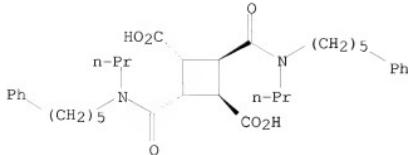
Relative stereochemistry.



RN 171348-98-4 CAPLUS

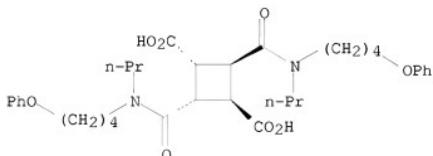
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((5-phenylpentyl)propylamino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)-
(9CI) (CA INDEX NAME)

Relative stereochemistry.



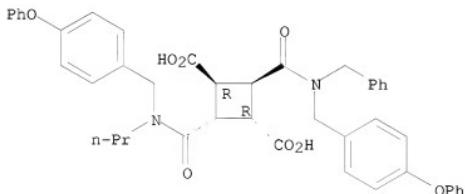
RN 171348-99-5 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxybutyl)propylamino]carbonyl]-, (1a,2a,3B,4B)-
 (CA INDEX NAME)

Relative stereochemistry.



RN 171349-00-1 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2-[[[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1a,2a,3B,4B)- (9CI) (CA INDEX NAME)

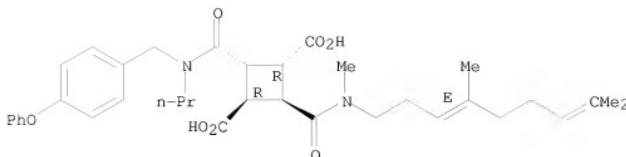
Relative stereochemistry.



RN 171349-01-2 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2-[[[(4,8-dimethyl-3,7-nonadienyl)methylamino]carbonyl]-4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.

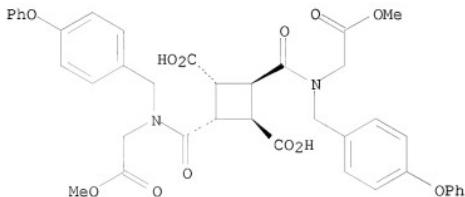
Double bond geometry as shown.



RN 171349-02-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-methoxy-2-oxoethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

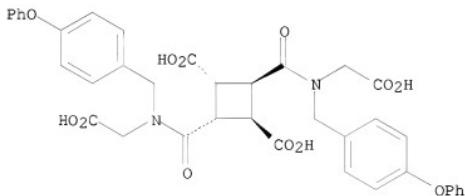
Relative stereochemistry.



RN 171349-03-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[((carboxymethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

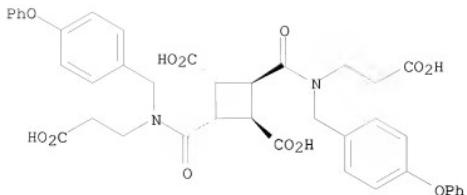
Relative stereochemistry.



RN 171349-04-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-carboxyethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

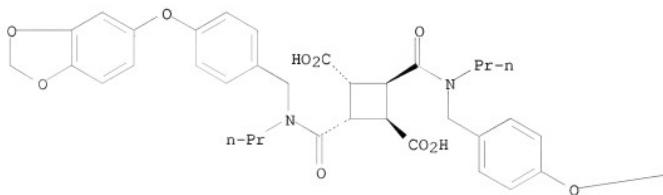


RN 171349-06-7 CAPLUS

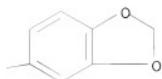
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(1,3-benzodioxol-5-yloxy)phenyl]methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.

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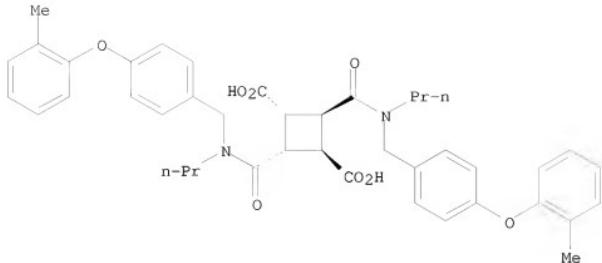
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RN 171349-09-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(2-methylphenoxy)phenyl]methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

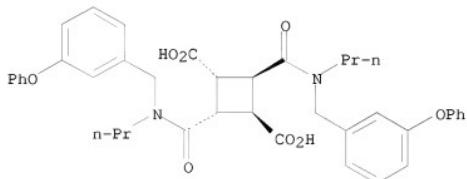
Relative stereochemistry.



RN 171349-10-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(3-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

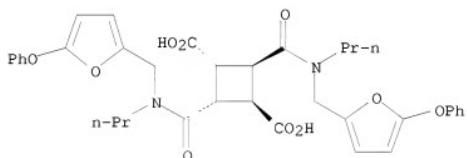
Relative stereochemistry.



RN 171349-11-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(5-phenoxy-2-furanyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

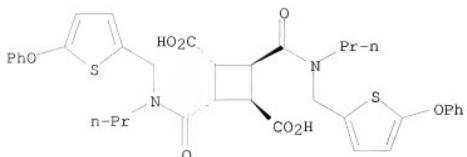
Relative stereochemistry.



RN 171349-12-5 CAPLUS

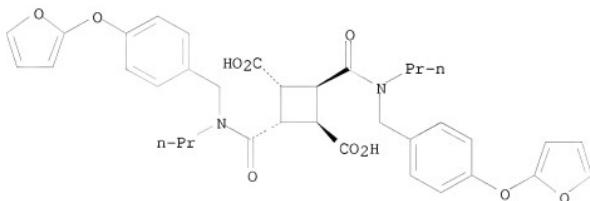
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(5-phenoxy-2-thienyl)methyl]propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



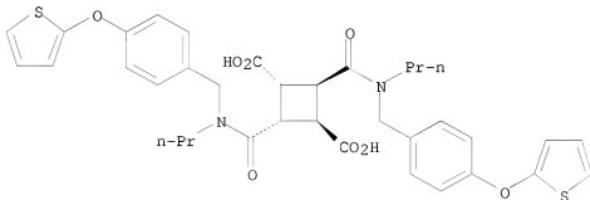
RN 171349-13-6 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(2-furanyloxy)phenyl]methyl]propylamino]carbonyl]-,
 (1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



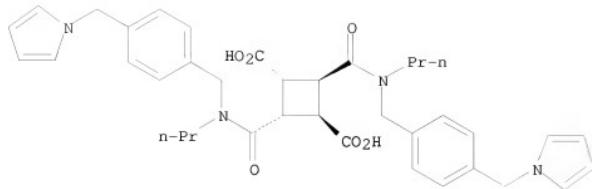
RN 171349-14-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[propyl[[4-(2-thienyloxy)phenyl]methyl]amino]carbonyl]-,
 (1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-15-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[propyl[[4-(1H-pyrrol-1-yl)methyl]phenyl]methyl]amino]carbonyl]-,
 (1a,2a,3b,4b)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

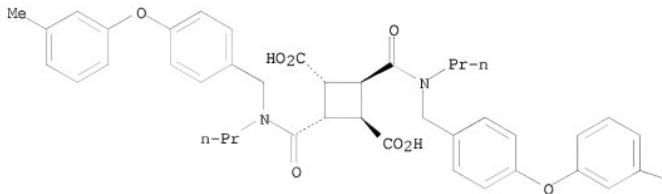


RN 171349-16-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-(3-methylphenoxy)phenyl)methyl]propylamino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.

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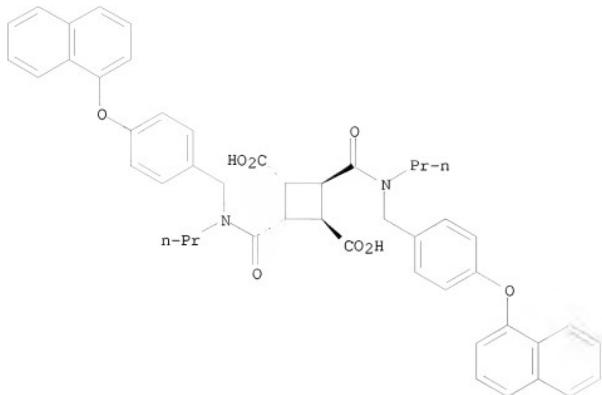
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RN 171349-17-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-(1-naphthalenyl)phenyl)methyl]propylamino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

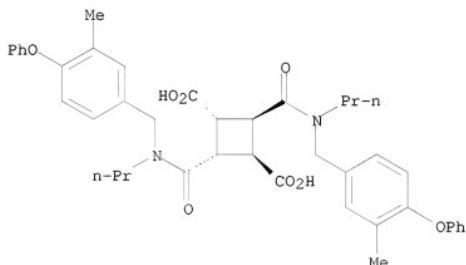
Relative stereochemistry.



RN 171349-18-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(3-methyl-4-phenoxyphenyl)methyl]propylamino]carbonyl-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

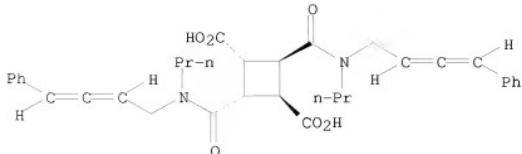
Relative stereochemistry.



RN 171349-19-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenyl-2,3-butadienyl)propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

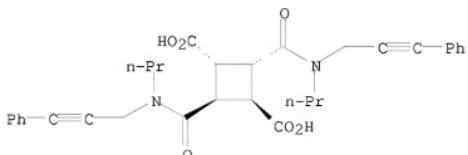
Relative stereochemistry.



RN 171349-20-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(3-phenyl-2-propynyl)propylamino]carbonyl-, (1 α ,2 α ,3 β ,4 β)-
(9CI) (CA INDEX NAME)

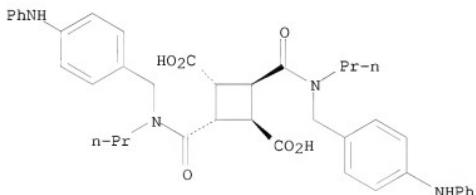
Relative stereochemistry.



RN 171349-21-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylamino)phenyl]methyl]propylamino]carbonyl-,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

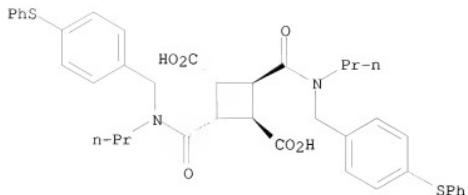
Relative stereochemistry.



RN 171349-22-7 CAPLUS

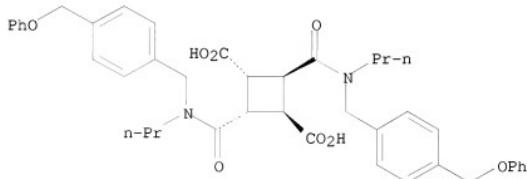
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenylthio)phenyl]methyl]propylamino]carbonyl-,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



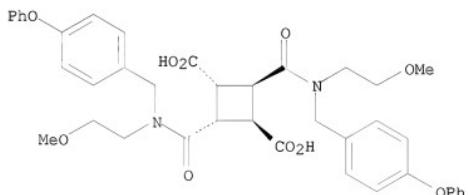
RN 171349-23-8 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[4-(phenoxymethyl)phenyl]methyl]amino]carbonyl]- (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



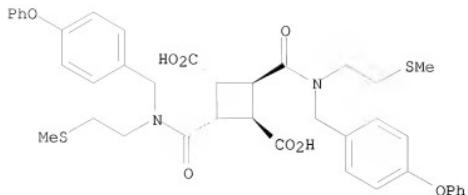
RN 171349-24-9 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[((2-methoxyethyl)(4-phenoxyphenyl)methyl)amino]carbonyl]- (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-25-0 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[2-(methylthio)ethyl]((4-phenoxyphenyl)methyl)amino]carbonyl]- (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

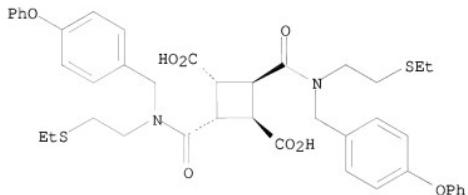
Relative stereochemistry.



RN 171349-26-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(2-(ethylthio)ethyl]amino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

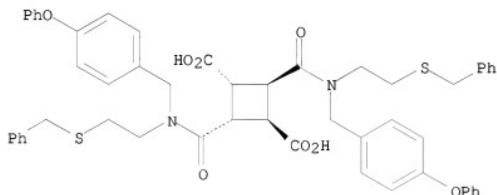
Relative stereochemistry.



RN 171349-27-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-phenoxyphenyl)methyl]thioethylamino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

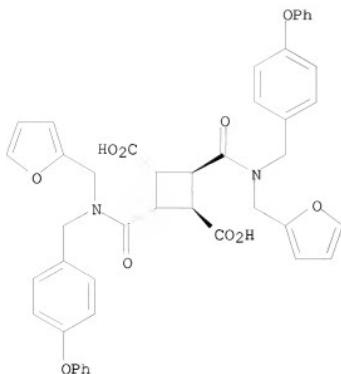
Relative stereochemistry.



RN 171349-28-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(2-furanylmethyl)amino)carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

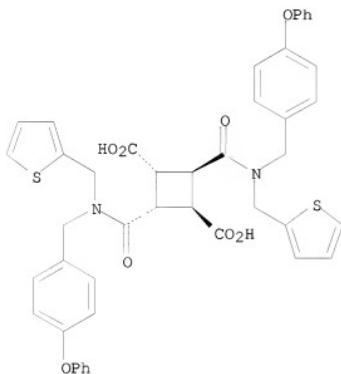
Relative stereochemistry.



RN 171349-29-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

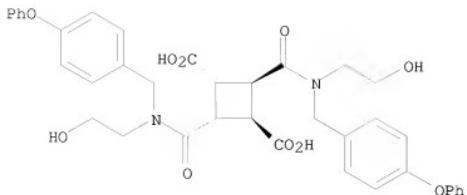
Relative stereochemistry.



RN 171349-30-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(2-hydroxyethyl)amino]carbonyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

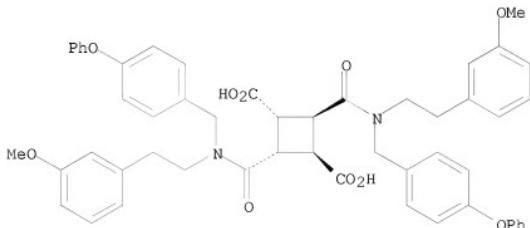
Relative stereochemistry.



RN 171349-31-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[2-(3-methoxyphenyl)ethyl]amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

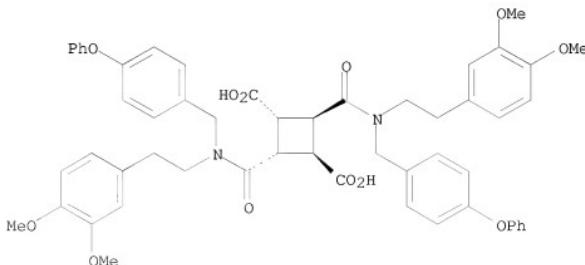
Relative stereochemistry.



RN 171349-32-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[2-(3,4-dimethoxyphenyl)ethyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

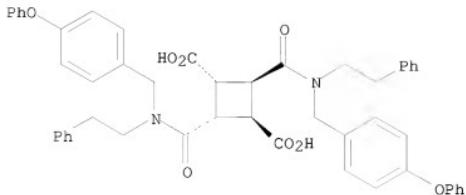
Relative stereochemistry.



RN 171349-33-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl](2-phenylethyl)amino]carbonyl]-, (1a,2a,3β,4β)- (CA INDEX NAME)

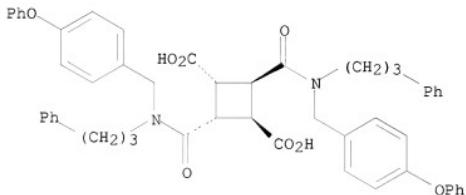
Relative stereochemistry.



RN 171349-34-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-phenoxyphenyl)methyl](3-phenylpropyl)amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

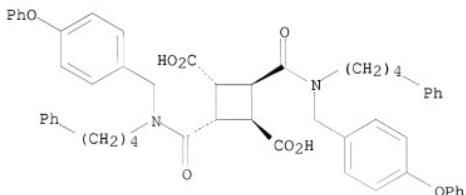
Relative stereochemistry.



RN 171349-35-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(4-phenoxyphenyl)methyl](4-phenylbutyl)amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

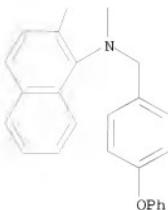
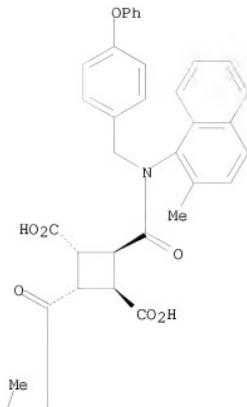
Relative stereochemistry.



RN 171349-36-3 CAPLUS

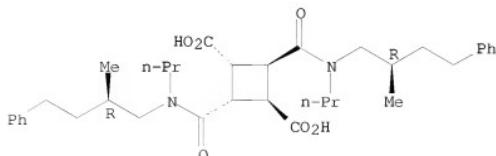
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis([(2-methyl-1-naphthalenyl)(4-phenoxyphenyl)methyl]amino]carbonyl)-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 171349-37-4 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-methyl-4-phenylbutyl)propylamino]carbonyl]-, [1 α ,2 α (R*),3 β ,4 β (R*)]- (9CI) (CA INDEX NAME)

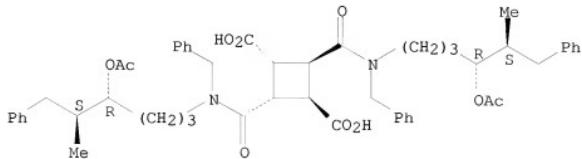
Relative stereochemistry.



RN 171349-39-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[4-(acetoxy)-5-methyl-6-phenylhexyl](phenylmethyl)amino]carbonyl]-, [1 α ,2 α (4R*,5S*),3 β ,4 β (4R*,5S*)]- (9CI) (CA INDEX NAME)

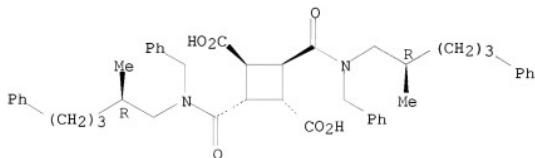
Absolute stereochemistry.



RN 171349-40-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(2R)-2-methyl-5-phenylpentyl](phenylmethyl)amino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)- (CA INDEX NAME)

Absolute stereochemistry.

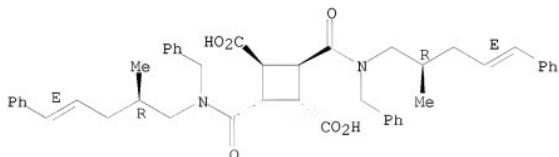


RN 171349-41-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(2R,4E)-2-methyl-5-phenyl-4-penten-1-yl](phenylmethyl)amino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)- (CA INDEX NAME)

Absolute stereochemistry.

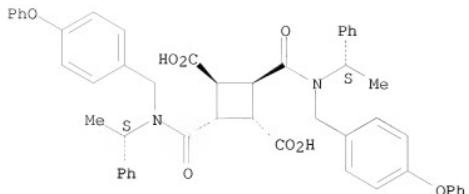
Double bond geometry as shown.



RN 171349-42-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl][(1S)-1-phenylethyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

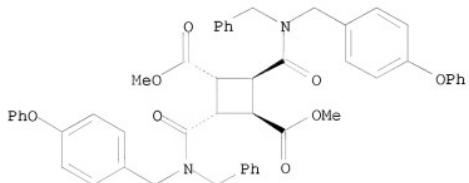
Absolute stereochemistry.



RN 171349-43-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl]amino]carbonyl]-, dimethyl ester,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

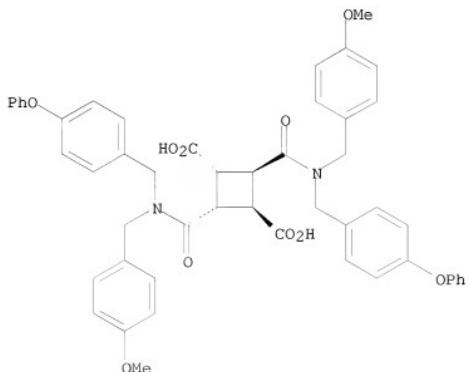
Relative stereochemistry.



RN 171349-44-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-methoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

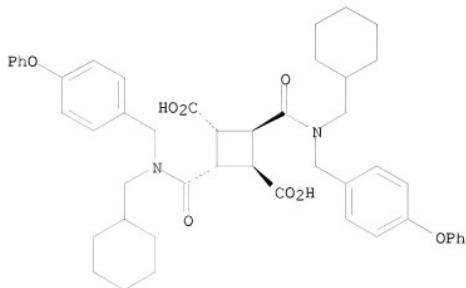
Relative stereochemistry.



RN 171349-45-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(cyclohexylmethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

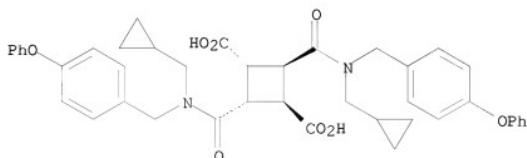
Relative stereochemistry.



RN 171349-47-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(cyclopropylmethyl)[(4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

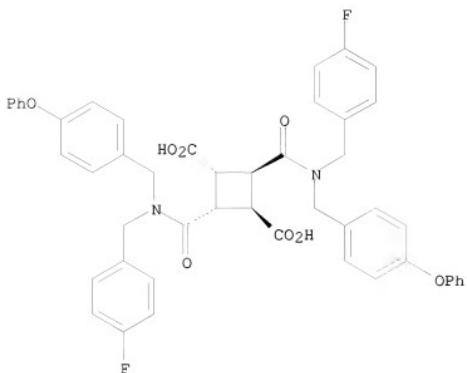
Relative stereochemistry.



RN 171349-48-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-fluorophenyl)methyl][[(4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

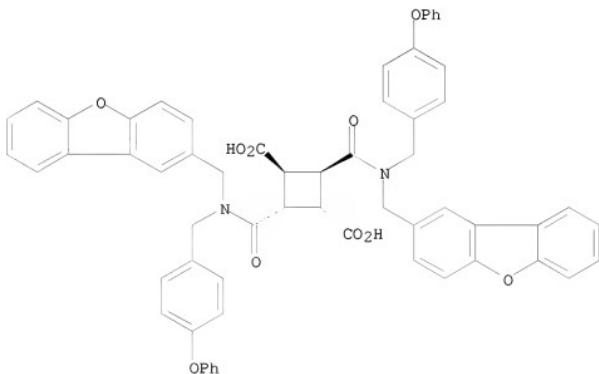
Relative stereochemistry.



RN 171349-49-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-dibenzofuranyl methyl)amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

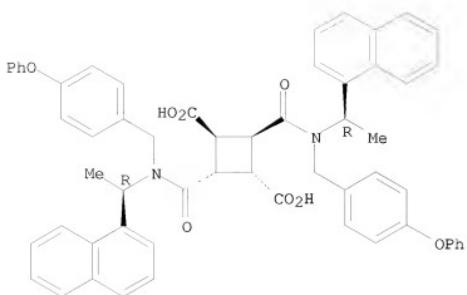
Relative stereochemistry.



RN 171349-50-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[{{(1R)-1-(1-naphthalenyl)ethyl}((4-phenoxyphenyl)methyl)amino]carbonyl}-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

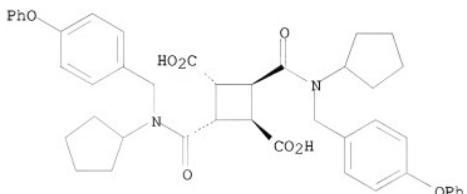
Absolute stereochemistry.



RN 171349-51-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[|cyclopentyl|(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

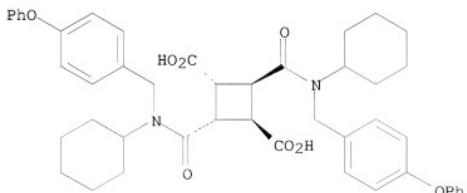
Relative stereochemistry.



RN 171349-52-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[|cyclohexyl|(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

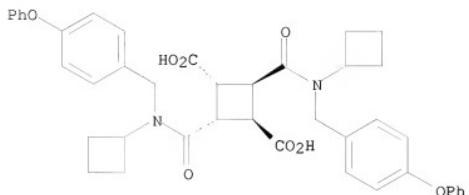
Relative stereochemistry.



RN 171349-53-4 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[|cyclobutyl|(4-phenoxyphenyl)methyl]amino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

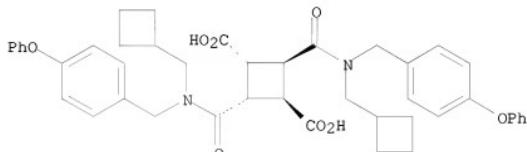
Relative stereochemistry.



RN 171349-54-5 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclobutylmethyl)amino]carbonyl-[(4-phenoxyphenyl)methyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

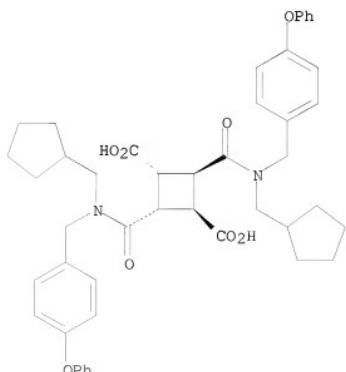
Relative stereochemistry.



RN 171349-55-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(cyclopentylmethyl)amino]carbonyl-[(4-phenoxyphenyl)methyl]-, (1a,2a,3b,4b)- (CA INDEX NAME)

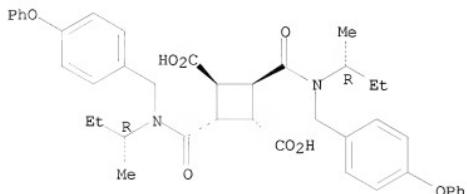
Relative stereochemistry.



RN 171349-56-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(1*R*)-1-methylpropyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1*a*,2*a*,3*b*,4*b*)- (CA INDEX NAME)

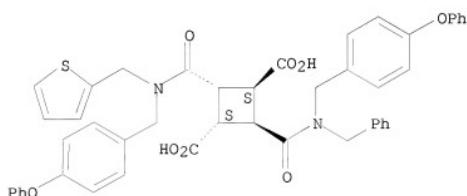
Absolute stereochemistry.



RN 171349-57-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2-[(4-phenoxyphenyl)methyl](phenylmethyl)amino]carbonyl]-4-[(4-phenoxyphenyl)methyl](2-thienylmethyl)amino]carbonyl]-,
(1*a*,2*a*,3*b*,4*b*)- (9CI) (CA INDEX NAME)

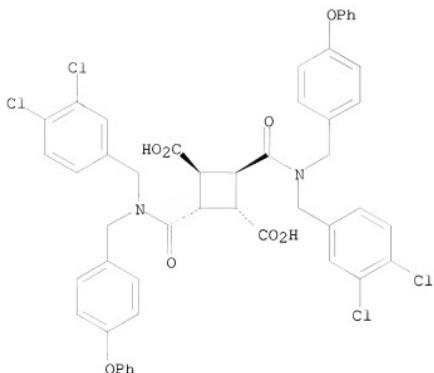
Relative stereochemistry.



RN 171349-58-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(3,4-dichlorophenyl)methyl][(4-phenoxyphenyl)methyl]amino]carbonyl]-,
(1*a*,2*a*,3*b*,4*b*)- (CA INDEX NAME)

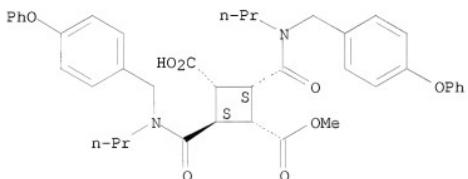
Relative stereochemistry.



RN 171483-63-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, monomethyl ester, (1 α ,2 α ,3 α ,4 β)- (9CI) (CA INDEX NAME)

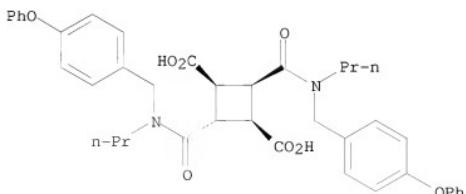
Relative stereochemistry.



RN 171483-64-0 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1 α ,2 α ,3 α ,4 β)- (CA INDEX NAME)

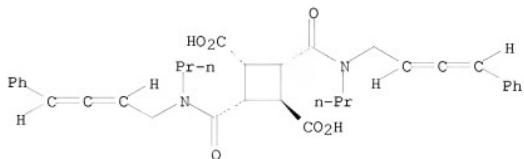
Relative stereochemistry.



RN 171483-65-1 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenyl-2,3-butadienyl)propylamino]carbonyl]-, (1 α ,2 α ,3 α ,4 β)-
(9CI) (CA INDEX NAME)

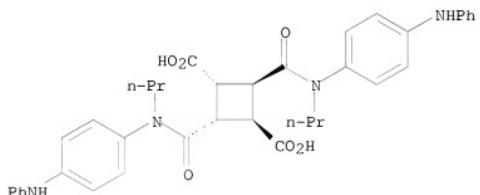
Relative stereochemistry.



RN 171483-66-2 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenylamino)phenylpropylamino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

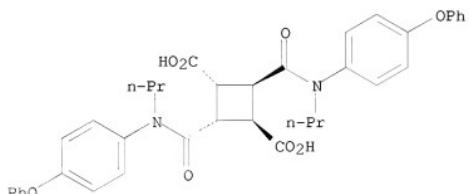
Relative stereochemistry.



RN 171483-67-3 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)propylamino]carbonyl]-, (1 α ,2 α ,3 β ,4 β)-
(CA INDEX NAME)

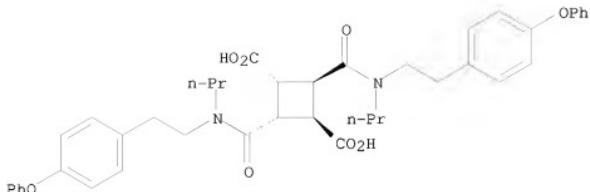
Relative stereochemistry.



RN 171483-68-4 CAPLUS

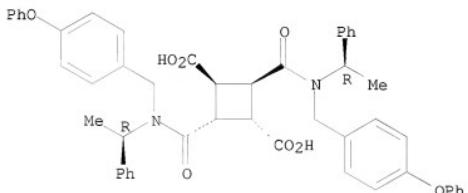
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-(4-phenoxyphenyl)ethyl)propylamino]carbonyl]-,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 1711483-69-5 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[[(4-phenoxyphenyl)methyl][(1R)-1-phenylethyl]amino]carbonyl]-, (1 α ,2 β ,3 β ,4 α)- (CA INDEX NAME)

Absolute stereochemistry.



L5 ANSWER 11 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1995:902590 CAPLUS

DOCUMENT NUMBER: 123:313433

ORIGINAL REFERENCE NO.: 123:56175a,56178a

TITLE: Cyclobutane derivatives as inhibitors of squalene synthetase and protein farnesyltransferase

INVENTOR(S): Baker, William R.; Rockway, Todd W.; Donner, B. Gregory; Shen, Wang; Rosenberg, Saul H.; Fakhoury, Stephen A.; O'Connor, Stephen J.; Stout, David M.; Fung, Anthony K. L.; et al.

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: PCT Int. Appl., 223 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

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|--|------|----------|-----------------|----------|
| WO 9512572 | A1 | 19950511 | WO 1994-US12132 | 19941020 |
| W: CA, JP | | | | |
| RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| CA 2152822 | A1 | 19950511 | CA 1994-2152822 | 19941020 |
| EP 677039 | A1 | 19951018 | EP 1994-931987 | 19941020 |
| EP 677039 | B1 | 19990310 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE | | | | |
| JP 08505646 | T | 19960618 | JP 1994-513255 | 19941020 |

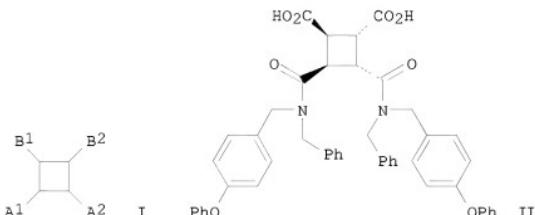
AT 177420
ES 2130452
PRIORITY APPLN. INFO.:

T 19990315
T3 19990701

AT 1994-931987
ES 1994-931987
US 1993-147708
US 1994-289711
WO 1994-US12132

19941020
19941020
A 19931104
A 19940909
W 19941020

OTHER SOURCE(S): MARPAT 123:313433
GI



AB The invention provides compds. I [A1, A2 = -XC(O)G, -XC(S)G, -(CH₂)_qNR1R2; X = bond, CH₂, O, S, (un)substituted NH; G = R2, NR1R2, OR2, SR2; R1 = H, alkyl, alkenyl, (un)substituted aryl, heterocyclyl, etc.; R2 = alkenyl, (un)substituted aryl, heterocyclyl, etc.; q = 0-2; B1, B2 = CH₂OH, CH:NOH, WR3, addnl. carbonyl-containing groups; W = bond, alkylene, alkenylene, CONH, NHCONH; R3 = various (un)substituted heterocyclic groups or squaric acid residue]. Also disclosed are preparation processes, intermediates, pharmaceutical compns., and treatment of hypercholesterolemic disorders, cancer, or fungal infections using the compds. I inhibit biosynthesis of cholesterol (and also fungal growth) by inhibiting squalene synthetase. I also inhibit farnesylation of the oncogene protein Ras by inhibiting protein farnesyltransferase (no data). For example, reaction of anti-1,2,3,4-cyclobutanetetracarboxylic dianhydride with 2 equiv 4-PhOC₆H₄CH₂NHCH₂Ph in THF at 25°, followed by workup and chromatog. of the isomeric products, gave 6% title compound II. In an in vitro test, II at 10 μM gave 99% inhibition of rat liver microsomal squalene synthetase. Over 160 synthetic examples (approx. 115 compds. I with data) are given, with similar test data for most compds.

IT 169943-31-1P 169943-32-2P 169943-33-3P

169943-34-4P 169943-35-5P 169943-36-6P

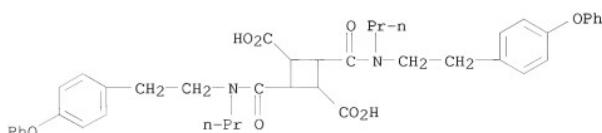
169943-37-7P 169943-38-8P 169943-39-9P

RL: BYP (Byproduct); PREP (Preparation)

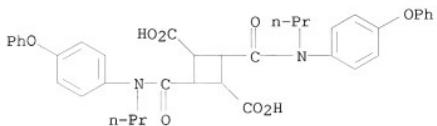
(byproduct; preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169943-31-1 CAPLUS

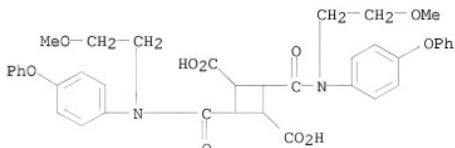
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis{[(2-(4-phenoxypyhenyl)ethyl)propylamino]carbonyl}- (CA INDEX NAME)



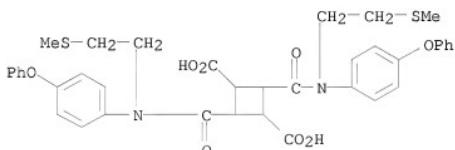
RN 169943-32-2 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(4-phenoxyphenyl)propylamino]carbonyl- (CA INDEX NAME)



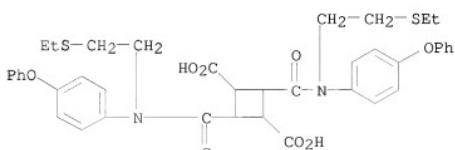
RN 169943-33-3 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[(2-methoxyethyl)(4-phenoxyphenyl)amino]carbonyl- (CA INDEX NAME)



RN 169943-34-4 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(methylthio)ethyl](4-phenoxyphenyl)aminocarbonyl- (CA INDEX NAME)

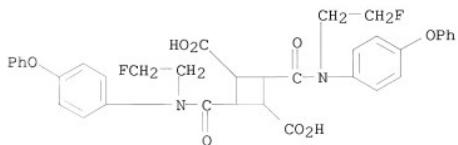


RN 169943-35-5 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[2-(ethylthio)ethyl](4-phenoxyphenyl)aminocarbonyl- (CA INDEX NAME)



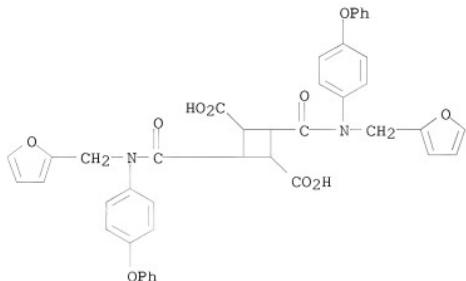
RN 169943-36-6 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-fluoroethyl)(4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



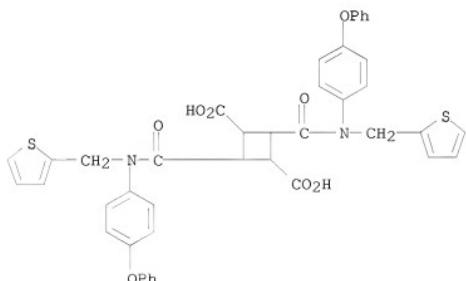
RN 169943-37-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(2-furanylmethyl)(4-phenoxyphenyl)amino]carbonyl]- (CA INDEX NAME)



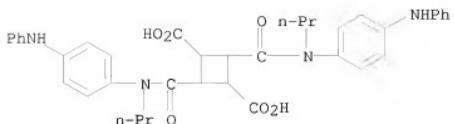
RN 169943-38-8 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenoxyphenyl)(2-thienylmethyl)amino]carbonyl]- (CA INDEX NAME)



RN 169943-39-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis[[(4-phenylamino)phenyl]propylamino]carbonyl]- (CA INDEX NAME)



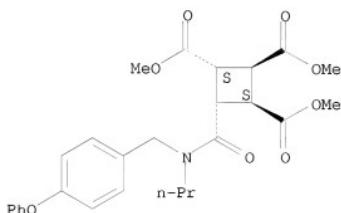
IT 169942-85-2P 169943-03-7P 169943-05-9P
169943-06-0P 169943-07-1P 170207-72-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(intermediate; preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169942-85-2 CAPLUS

CN 1,2,3-Cyclobutanecarboxylic acid,
4-[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, trimethyl ester,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

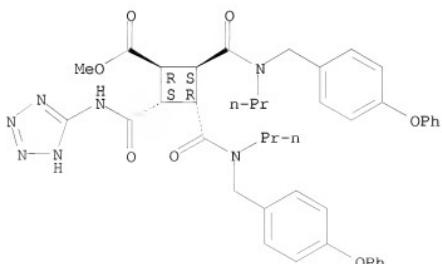
Relative stereochemistry.



RN 169943-03-7 CAPLUS

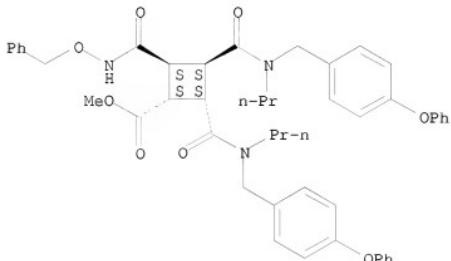
CN Cyclobutanecarboxylic acid, 2,3-bis[[[4-
phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1H-tetrazol-5-
ylamino)carbonyl]-, methyl ester, (1R,2S,3R,4S)-rel- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



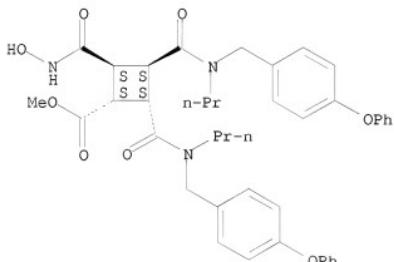
RN 169943-05-9 CAPLUS
CN Cyclobutanecarboxylic acid, 2,3-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(phenylmethoxy)amino]carbonyl-, methyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



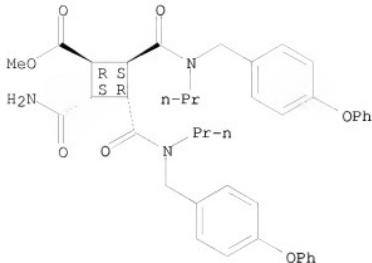
RN 169943-06-0 CAPLUS
CN Cyclobutanecarboxylic acid, 2-[(hydroxyamino)carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, methyl ester, (1R,2R,3R,4R)-rel- (CA INDEX NAME)

Relative stereochemistry.



RN 169943-07-1 CAPLUS
CN Cyclobutanecarboxylic acid, 2-(aminocarbonyl)-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, methyl ester, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

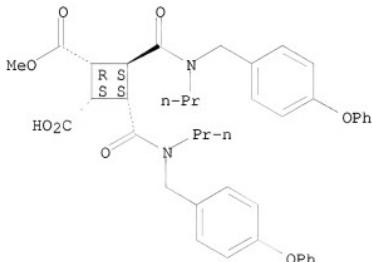
Relative stereochemistry.



RN 170207-72-4 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, monomethyl ester, (1R,2S,3S,4S)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



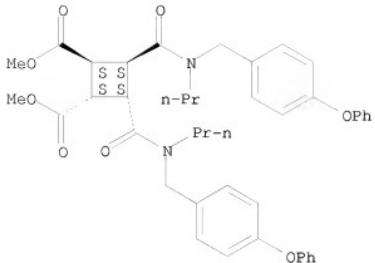
IT 169942-55-6P 169942-56-7P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169942-55-6 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, dimethyl ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

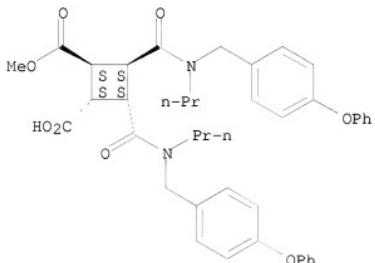
Relative stereochemistry.



RN 169942-56-7 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, monomethyl ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



IT 169942-41-0P 169942-53-4P 169942-57-8P

169942-58-9P 169942-63-6P 169942-65-8P

169942-67-0P 169942-68-1P 169942-69-2P

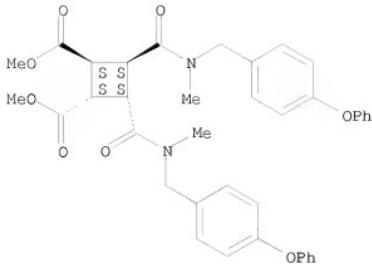
169942-70-5P 169944-08-5P 169944-09-6P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of cyclobutane derivs. as inhibitors of squalene synthetase and protein farnesyltransferase)

RN 169942-41-0 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis[[methyl[(4-phenoxyphenyl)methyl]amino]carbonyl]-, dimethyl ester, (1R,2R,3R,4R)-rel- (9CI) (CA INDEX NAME)

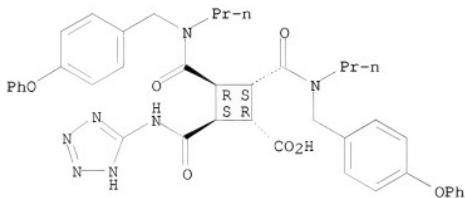
Relative stereochemistry.



RN 169942-53-4 CAPLUS

CN Cyclobutane carboxylic acid, 2,3-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-4-[(1*H*-tetrazol-5-ylamino)carbonyl]-, (1*R*,2*S*,3*R*,4*S*)-rel- (9CI) (CA INDEX NAME)

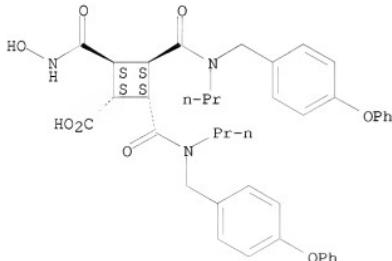
Relative stereochemistry.



RN 169942-57-8 CAPLUS

CN Cyclobutane carboxylic acid, 2-[(hydroxyamino)carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1*R*,2*R*,3*R*,4*R*)-rel- (CA INDEX NAME)

Relative stereochemistry.

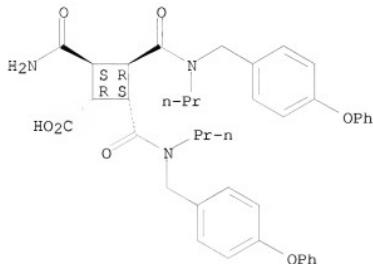


RN 169942-58-9 CAPLUS

CN Cyclobutane carboxylic acid, 2-(aminocarbonyl)-3,4-bis[[(4-

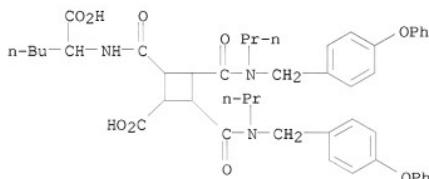
phenoxyphenyl)methyl]propylamino]carbonyl]-, (1*R*,2*S*,3*R*,4*S*)-*rel-* (CA INDEX NAME)

Relative stereochemistry.



RN 169942-63-6 CAPLUS

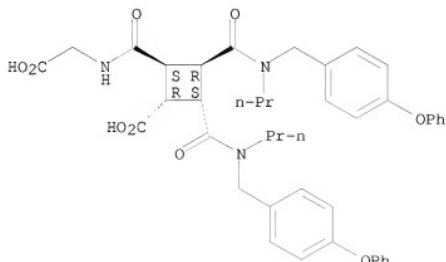
CN Cyclobutane carboxylic acid, 2-[(1-carboxypentyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 169942-65-8 CAPLUS

CN Cyclobutane carboxylic acid, 2-[(carboxymethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1*R*,2*S*,3*R*,4*S*)-*rel-* (CA INDEX NAME)

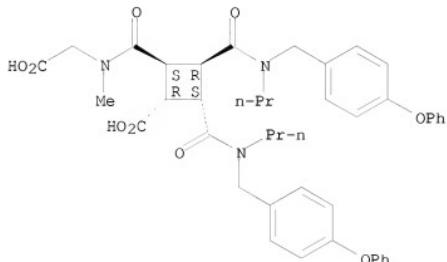
Relative stereochemistry.



RN 169942-67-0 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(carboxymethyl)methylamino]carbonyl]-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]-, (1R,2S,3R,4S)-rel- (CA INDEX NAME)

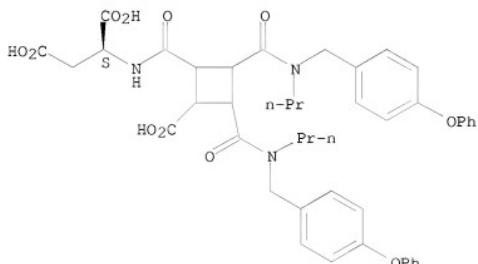
Relative stereochemistry.



RN 169942-68-1 CAPLUS

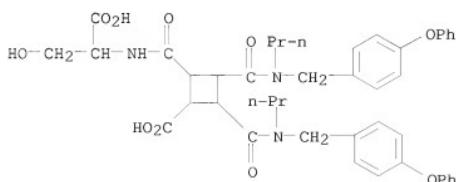
CN L-Aspartic acid, N-[[2-carboxy-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]cyclobutyl]carbonyl]- (CA INDEX NAME)

Absolute stereochemistry.



RN 169942-69-2 CAPLUS

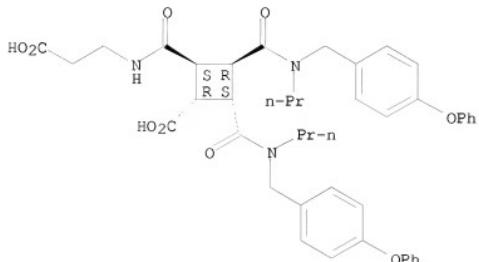
CN Cyclobutanecarboxylic acid, 2-[(1-carboxy-2-hydroxyethyl)amino]carbonyl]-3,4-bis[[[(4-phenoxyphenyl)methyl]propylamino]carbonyl]- (CA INDEX NAME)



RN 169942-70-5 CAPLUS

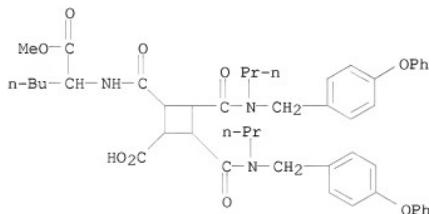
CN Cyclobutanecarboxylic acid, 2-[(2-carboxyethyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, (1R,2S,3R,4S)-rel-(CA INDEX NAME)

Relative stereochemistry.



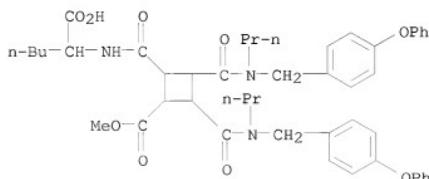
RN 169944-08-5 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[[1-(methoxycarbonyl)pentyl]amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl- (CA INDEX NAME)



RN 169944-09-6 CAPLUS

CN Cyclobutanecarboxylic acid, 2-[(1-carboxypentyl)amino]carbonyl]-3,4-bis[[(4-phenoxyphenyl)methyl]propylamino]carbonyl-, 1-methyl ester (CA INDEX NAME)



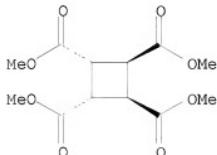
REFERENCE COUNT:

1

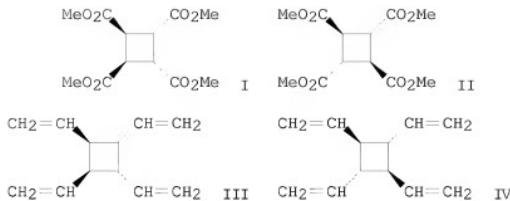
THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 12 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1989:74416 CAPLUS
 DOCUMENT NUMBER: 110:74416
 ORIGINAL REFERENCE NO.: 110:12283a,12284a
 TITLE: Three puzzles for organic laboratory
 AUTHOR(S): Todd, David; Pickering, Miles
 CORPORATE SOURCE: Worcester Polytech. Inst., Worcester, MA, 01609, USA
 SOURCE: Journal of Chemical Education (1988), 65(12), 1100-2
 CODEN: JCED8; ISSN: 0021-9584
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Three puzzles are described for organic labs., each of which can be solved using m.p. alone, and each of which involves work at the 100-200-mg scale. The 1st puzzle involves determining the product of the Friedel-Crafts acylation of 2-chlorotoluene with AcCl, the 2nd puzzle involves the determination of the product of the nucleophilic substitution of 3,4-dichloronitrobenzene with Na methoxide, and the 3rd puzzle involves determining the isomer formed from the photodimerization of maleic anhydride.
 IT 1032-95-7
 RL: MSC (Miscellaneous)
 (m.p. determination of, laboratory experiment in)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1a,2a,3β,4β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 13 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1983:594460 CAPLUS
 DOCUMENT NUMBER: 99:194460
 ORIGINAL REFERENCE NO.: 99:29923a,29926a
 TITLE: cis,trans,cis- and
 trans,trans,trans-1,2,3,4-Tetravinylcyclobutane -
 preparation and some spectroscopic properties
 AUTHOR(S): Gleiter, Rolf; Haider, Rudolf; Gubernator, Klaus;
 Bischof, Peter
 CORPORATE SOURCE: Org. Chem. Inst., Univ. Heidelberg, Heidelberg,
 D-6900, Fed. Rep. Ger.
 SOURCE: Chemische Berichte (1983), 116(8), 2983-93
 CODEN: CHBEAM; ISSN: 0009-2940
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 99:194460
 GI



AB Photochem. cyclization of di-Me fumarate gave I, which with NaOMe gave II. These were converted by standard means into the tetrakis(bromoethyl) derivs., dehydrohalogenation of which gave III and IV, resp., the photoelectron spectra of which showed strong interaction between the vinyl groups and the ring, but little interaction between the vinyl groups.

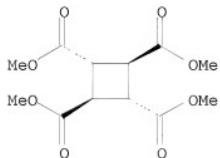
IT 3999-67-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydride reduction of)

RN 3999-67-5 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 β ,3 α ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



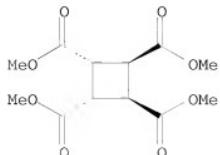
IT 1032-95-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation, isomerization, and hydride reduction of)

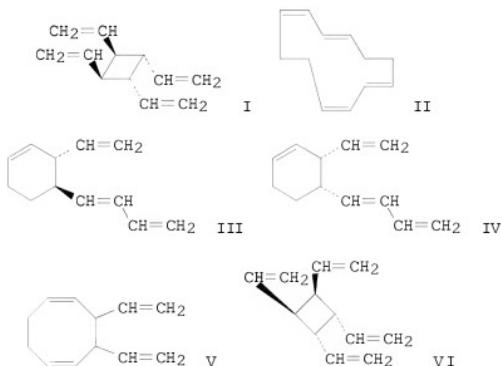
RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



ACCESSION NUMBER: 1982:526711 CAPLUS
 DOCUMENT NUMBER: 97:126711
 ORIGINAL REFERENCE NO.: 97:21025a,21028a
 TITLE: From cis,trans,cis-1,2,3,4-tetravinylcyclobutane to cyclododecatetraene - two consecutive Cope rearrangements
 AUTHOR(S): Gubernator, Klaus; Gleiter, Rolf
 CORPORATE SOURCE: Org.-Chem. Inst., Univ. Heidelberg, Heidelberg, D-6900, Fed. Rep. Ger.
 SOURCE: Angewandte Chemie (1982), 94(9), 710-11
 DOCUMENT TYPE: CODEN: ANCEDA; ISSN: 0044-8249
 LANGUAGE: Journal German
 OTHER SOURCE(S): CASREACT 97:126711
 GI



AB I was prepared in a multistep synthesis from trans-MeO₂CCH:CHCO₂Me. I at 120° isomerizes almost quant. to a 63:23:14 II (and its cis-trans isomer)-III-IV mixture; the product ratio was temperature and medium independent.

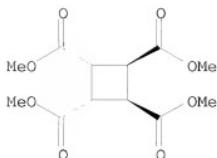
The reaction involves the Cope rearrangement of I to the common intermediate V via VI; V is unstable at these temps. and undergoes a second Cope rearrangement to give II or a 1,3-H shift to give III and IV. The products and I were characterized by ¹³C and ¹H NMR.

IT 1032-95-7

RL: RCT (Reactant); RACT (Reactant or reagent)
(hydride reduction of)

RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 15 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1972:500953 CAPLUS

DOCUMENT NUMBER: 77:100953

ORIGINAL REFERENCE NO.: 77:16639a, 16642a

TITLE: Photodehydrocyclizations in stilbenelike compounds.

V. Photochemistry of 2,2'-distyrylbiphenyl

Laarhoven, W. H.; Cuppen, Th. J. H. M.

Dep. Org. Chem., R. C. Univ., Nijmegen, Neth.

CORPORATE SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999)

1: (1972), (16), 2074-9

CODEN: JCPRB4; ISSN: 0300-922X

DOCUMENT TYPE: Journal

LANGUAGE: English

GI For diagram(s), see printed CA Issue.

AB Irradiation of 2,2'-distyrylbiphenyl (I) in hexane under N for .apprx.15 min gave the kinetically-controlled product trans,trans,trans-1,2,2a,10b-tetrahydro-1,2-diphenylcyclobuta[1]phenanthrene (II) but irradiation, for 6 hr gave 4,5,9,10-tetrahydro-4,9-diphenylphrene (III). Irradiation of I under N in the presence of iodine gave (-phenylbenzo[c]chrysene (IV). I in an evacuated tube at 240-50° for 2 hr gave, cis,cis,cis-1,2,2a,10b-tetrahydro-1,2-diphenylcyclobuta[1]phenanthrene (V). On irradiation or heating II reverted to I but V decomposed to cis-stilbene and phenanthrene.

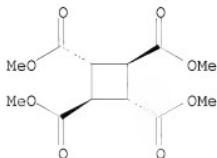
IT 3999-67-5P 31351-41-4P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 3999-67-5 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2B,3a,4B)- (9CI) (CA INDEX NAME)

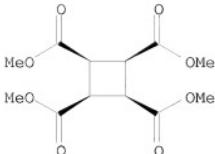
Relative stereochemistry.



RN 31351-41-4 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3a,4a)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 16 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1972:24393 CAPLUS

DOCUMENT NUMBER: 76:24393

ORIGINAL REFERENCE NO.: 76:3967a,3970a

TITLE: Photochemical cycloaddition reactions. II.
Dimerization and cycloadduct formation of some
seven-membered carbocycles

AUTHOR(S): Kopecky, J.; Shields, J. E.

CORPORATE SOURCE: Ustav Prum. Hyg., Prague, Czech.

SOURCE: Collection of Czechoslovak Chemical Communications
(1971), 36(10), 3517-26

CODEN: CCCCAK; ISSN: 0010-0765

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 76:24393

AB The photochem. behavior of 2,3,6,7-dibenzocycloheptatrien-1-one (I),
2,3,6,7-dibenzocycloheptatriene and
1-methylene-2,3,6,7-dibenzocycloheptatriene (II), individually and in the
presence of each other, was studied. Irradiation of solns. of these
substances gave anti cyclobutane dimers and adducts; reactions occurred
exclusively at the endocyclic olefinic sites in I and II. This observed
photospecificity is supported by MO calcns. of delocalization energies for
the possible reactive sites in the monomers. The elucidation of
structures, thermal decomposition, chemical interconversions, and
stereochemistry
of the photoproducts are described.

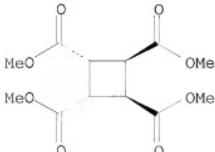
IT 1032-95-7 31351-41-4P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3b,4b)- (CA INDEX NAME)

Relative stereochemistry.



RN 31351-41-4 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3a,4a)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 17 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1971:488002 CAPLUS

DOCUMENT NUMBER: 75:88002

ORIGINAL REFERENCE NO.: 75:13929a,13932a

TITLE: Topochemistry. XXXI. Formation of 1,5-cis,cis-cyclooctadienes from 1,4-disubstituted s-trans-butadienes in the solid state. C4- versus C8-cyclodimerization

AUTHOR(S): Schmidt, G. M. J.; Green, B. S.; Lahav, M.

CORPORATE SOURCE: Dep. Chem., Weizmann Inst. Sci., Rehovot, Israel
SOURCE: Journal of the Chemical Society [Section] B: Physical Organic (1971), (8), 1552-64
CODEN: JCSPAC; ISSN: 0045-6470

DOCUMENT TYPE: Journal
LANGUAGE: English

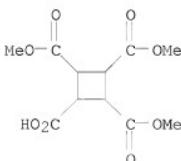
AB Solid MeCH:CHCH:CHCO2H (I), MeCH:CHCH:CHCONH2 (II), NCCH:CHCH:CHCN (III), PhCH:CHCH:CHCO2H (IV), PhCH:CHCH:CHCO2Me, and PhCH:CHCH:CHCONH2 (V) (all with trans,trans-configuration) dimerized on irradiation ($\lambda > 290$ nm) to divinylcyclobutane derivs. The structures of the fully characterized photoproducts from I, II, III, and V and the light-stability of PhCH:CHCH:CHCONHPh were predictable from the known or postulated packing arrangements of their monomers. trans-1,trans-15-Cyclooctadienes, although topochem. and symmetry-allowed from monomers which crystallize with parallel butadiene chains (I, II, III, and possibly IV), were not observed. The (all-axial)-cis-1,cis-5-cyclooctadiene derivs. formed during irradiation of I, II, and IV were not primary photoproducts but arose from thermal Cope rearrangements of photochem.-produced cis-1,2-divinylcyclobutanes.

IT 34271-90-4

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 34271-90-4 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, trimethyl ester, stereoisomer
(8CI) (CA INDEX NAME)

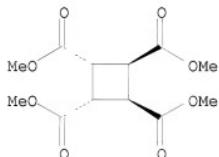


L5 ANSWER 18 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1971:411703 CAPLUS

DOCUMENT NUMBER: 75:11703
 ORIGINAL REFERENCE NO.: 75:1873a,1876a
 TITLE: Structure of a planar cyclobutane.
 AUTHOR(S): Margulis, Thomas N.
 CORPORATE SOURCE: Dep. Chem., Univ. Massachusetts, Boston, MA, USA
 SOURCE: Journal of the American Chemical Society (1971),
 93(9), 2193-5
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A single-crystal x-ray diffraction study of the title compound shows the cyclobutane ring to be planar with C-C bond lengths of 1.572 ± 0.005 and 1.541 ± 0.004 Å. The crystals are triclinic, space group P, with $a = 8.939$, $b = 5.963$, and $c = 6.454$ Å; $\alpha = 95.17$, $\beta = 81.43$, $\gamma = 78.74^\circ$; $Z = 1$ and calculated $d.$ = 1.45. The structure was refined to an R value of 0.035 for 833 independent reflections.
 IT 1032-95-7
 RL: PRP (Properties)
 (crystal structure of)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

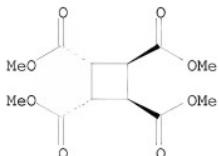
Relative stereochemistry.



L5 ANSWER 19 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1971:75813 CAPLUS
 DOCUMENT NUMBER: 74:75813
 ORIGINAL REFERENCE NO.: 74:12299a,12302a
 TITLE: Photochemistry of α,β -unsaturated
 γ -lactones. I. Structures of the photodimers
 AUTHOR(S): Ohga, Kazuya; Matsuo, Taku
 CORPORATE SOURCE: Fac. Eng., Kyushu Univ., Fukuoka, Japan
 SOURCE: Bulletin of the Chemical Society of Japan (1970),
 43(11), 3505-10
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 GI For diagram(s), see printed CA Issue.
 AB The structures of the photodimers obtained from 4-hydroxycrotonic acid
 γ -lactone under several conditions were determined. The products of
 irradiation in the solution were a pair of anti dimers: one is a head-to-head
 cycloadduct (I) and the other a head-to-tail adduct (II). The
 corresponding product in the solid state, on the other hand, was a
 head-to-head cycloadduct (III), in the syn form.
 IT 1032-95-7P 31351-41-4P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of)

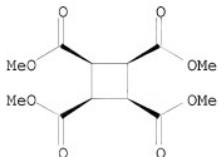
RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 31351-41-4 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 α ,4 α)- (9CI) (CA INDEX NAME)

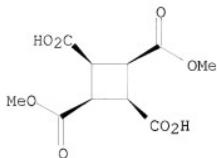
Relative stereochemistry.



L5 ANSWER 20 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1970:487884 CAPLUS
DOCUMENT NUMBER: 73:87884
ORIGINAL REFERENCE NO.: 73:14365a,14368a
TITLE: Effect of radiation on stable nucleic acid. 19.
Synthesis of the cis/syn- and cis/anti-dimeric uracils
Richter, Peter; Fahr, Egon
Inst. Org. Chem., Univ. Wuerzburg, Wuerzburg, Fed.
Rep. Ger.
SOURCE: Tetrahedron Letters (1970), (22), 1921-3
CODEN: TELEAY; ISSN: 0040-4039
DOCUMENT TYPE: Journal
LANGUAGE: German
GI For diagram(s), see printed CA Issue.
AB The cis/anti- and cis/syn-dimeric uracils (I) and (II), resp., were prepared Thus, refluxing III in MeOH gave IV (R = OH) and V (R = OH). IV (R = OH) was heated in CHCl₃ with PCl₅ to give IV (R = Cl) which was treated with NaN₃ in CHCl₃ to give IV (R = N₃). Refluxing IV (R = N₃) in PhMe under N gave VI (R = NCO) which was converted to VI (R = NHCONH₂) by NH₃ in CHCl₃. I (4%) and uracil were prepared by heating VI (R = NHCONH₂) with 2N HCl at 65-70°. The ir spectrum of I was identical with that of the product of uv irradiation of uracil. II was similarly prepared from V (R = OH).
IT 28972-38-5
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 28972-38-5 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,

cis-1,2,cis-1,3,cis-1,4- (8CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 21 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1970:132351 CAPLUS

DOCUMENT NUMBER: 72:132351

ORIGINAL REFERENCE NO.: 72:23687a,23690a

TITLE: Preparation and properties of some 1,1'-diphenyl-syn, trans-truxane[9,10-diphenyl-syn, trans-4b,4c,9,9z,9b,10-hexahydrocyclobuta[1,2-a:4,3- aldiindene]derivatives

AUTHOR(S): Setliff, Frank L.

CORPORATE SOURCE: Univ. of Arkansas, Little Rock, AR, USA

SOURCE: Proceedings of the Arkansas Academy of Science (1969), 23, 177-82

CODEN: AKASAO; ISSN: 0097-4374

DOCUMENT TYPE: Journal

LANGUAGE: English

AB exo,exo-1,1'-Dibromo-syn,trans-truxane (I) was treated with PhMgBr in the presence of CoCl₂ in ether-benzene to yield 51% exo,exo-1,1'-diphenyl-syn,trans-truxane (II), m. 205-6° (methylcyclohexane). II was also prepared (in 20% yield) by the alkylation of C₆H₆ with I in the presence of AlCl₃ (12 hr at room temperature and 1 hr at 50°). Longer reaction times or higher temps. cause the disappearance of II and give 30% exo,endo-1,1'-diphenyl-syn,trans-truxane (III), m. 147-9°. II isomerizes to III (37% yield) with excess AlCl₃ in C₆H₆ with gaseous HCl. The exo,exo isomer was assumed to be the more stable; two sequences are offered to explain the II → III isomerization. Degradative ozonolysis of II and III in AcOH at room temperature, followed by esterification of the acid product with CH₂N₂ give cis,trans-1,2,3,4-tetracarbomethoxy-cyclobutane.

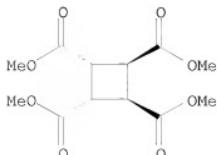
IT 1032-95-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3β,4β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 22 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1970:42919 CAPLUS

DOCUMENT NUMBER: 72:42919

ORIGINAL REFERENCE NO.: 72:7855a,7858a

TITLE: Cyclobutanes. XXIV. Rearrangement of the tricyclo[4.2.0.02.5]octane system into the tricyclo[4.2.0.02.4]octane system

AUTHOR(S): Avram, Margareta; Mateescu, Gheorghe D.; Dinulescu, Ilie G.; Nenitzescu, Costin D.

CORPORATE SOURCE: Org.-Chem. Inst., Akad. R.S.R., Bucharest, Rom.

SOURCE: Chemische Berichte (1969), 102(12), 4008-16

CODEN: CHBEAM; ISSN: 0009-2940

DOCUMENT TYPE: Journal

LANGUAGE: German

GI For diagram(s), see printed CA Issue.

AB Addition of Br to anti-tricyclo[4.2.0.02.5]octa-3,7-diene yielded two 3,4,7,8-tetrabromo-anti-tricyclo[4.2.0.02.5]octanes (I and II) which showed cis-trans isomerism of the Br atoms 7 and 8. I and II gave upon base treatment 3,7(or 3,8)-dibromo-anti-tricyclo[4.2.0.02.5]octa-3,7-diene. I and II gave upon heating the corresponding 3,5,7,8-tetrabromo-anti-tricyclo[4.2.0.02.4]octanes (III and IV, resp.).

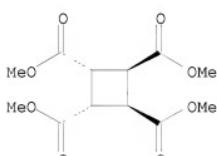
IT 1032-95-7P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 23 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1969:469903 CAPLUS

DOCUMENT NUMBER: 71:69903

ORIGINAL REFERENCE NO.: 71:12881a,12884a

TITLE: Photolytic transformations of
cis,cis-cyclodeca-3,8-diene-1,6-dione

AUTHOR(S): Stankorb, Jerry W.; Conrow, Kenneth

CORPORATE SOURCE: Kansas State Univ., Manhattan, KS, USA

SOURCE: Tetrahedron Letters (1969), (28), 2395-8

CODEN: TELEAY; ISSN: 0040-4039

DOCUMENT TYPE: Journal

LANGUAGE: English

GI For diagram(s), see printed CA Issue.

AB Irradiation of cis,cis-cyclodeca-3,8-diene-1,6-dione (I) in Me₂CO 2.5 hrs. gave 4 products including 60% tricyclic diketone (II, R = H₂) (IIa). IIa refluxed in EtOH with BzH and a catalytic amount of piperidine yielded 85% tetrabenzylidene derivative (II, R = PhCH) (IIb), m. 211-12°.

Ozonolysis of IIb, followed by oxidative work-up and esterification with CH₂N₂ yielded 33% tetramethyl 1,2,3,4-cyclobutanetetracarboxylate (III), m. 147°. The tricyclo[4.4.0.02.7] isomer (IV) could only give the

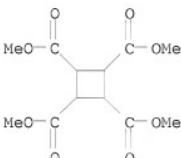
trans,trans,trans-tetracarboxylate. The tricyclic diketone (V) was converted to the dibenzylidene derivative (VI, R = O), m. 269°, in 87% yield, reduced by 1:2 LiAlH₄-AlCl₃ to 3,8-dibenzylidenetricyclo[5.3.0.02,6]decane (VI, R = H) (VII), m. 123-4°, in 22% yield. Oxidation of VII with NaIO₄-KMnO₄ in aqueous dioxane gave 44.4% IIa. Baeyer-Villiger oxidation of the tricyclic diketone gave only 1 dilactone, m. 211-12°, presumably arising from IIa and not from the isomer IV which should produce 2 lactones. IIa was identical with the supposed *cis, sync, cis*-tricyclo[5.3.0.02,6]decane-4,9-dione of Shani (1968) by trans-ketalization with MeC(OMe)2Me and p-MeC₆H₄SO₃H to give the reported diketal. IIa gave an oxime, m. 255-8°. IIa and a molar equivalent of N₂H₄.H₂O gave a high yield of an azine (VIII), m. 295° (decomposition), v 3320, 1740, 1655 cm.⁻¹, indicating residual CO groups and terminal NH₂. VIII was accordingly formulated as a linear polymer with CO and hydrazone end groups. Upon electron impact or thermal decomposition retrocyclization in the 4-membered ring gives fragments (IX,X) of various sizes accounting for the mass spectrum, m/e 160, 242, 320, 402, 480, 562. Evidently I undergoes *cis-trans* isomerization either prior to, or concerted with, photocyclization. IIa is obtained from I even under conditions where no photosensitization may be expected. Under these conditions n-π* excitation and intersystem crossing to a triplet state is followed by intramolecular energy transfer to one of the double bond π systems. Isomerization and cyclization may then ensue in this or subsequent excited states.

IT 14495-41-1P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
(Photolytic transformations of *cis,cis*-cyclodeca-3,8-diene-1,6-dione)

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 24 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1969:106459 CAPLUS

DOCUMENT NUMBER: 70:106459

ORIGINAL REFERENCE NO.: 70:19879a, 19882a

TITLE: Action of radiation on nucleic acid components. XVI.
Synthesis of *trans/syn-trans/anti*-dimeric uracil

AUTHOR(S): Richter, P.; Fahr, Egon

CORPORATE SOURCE: Univ. Wuerzburg, Wuerzburg, Fed. Rep. Ger.

SOURCE: Angewandte Chemie, International Edition in English
(1969), 8(3), 208-9

CODEN: ACIEAY; ISSN: 0570-0833

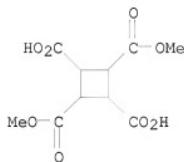
DOCUMENT TYPE: Journal

LANGUAGE: English

AB *trans-1,2,3,4-Cyclobutanetetracarboxylic acid dianhydride* is converted to *trans-1,2-bis(3-methylureido)-trans-3,4-cyclobutanedi-carboxylic acid di-Me ester* (I); the *trans-1,3-trans-2,3-isomer* (II) of I is prepared from a *di-Me trans-1,3-cyclobutanedicarboxylate*. I and II are heated with 2N HCl to give the title dimers.

IT 22555-07-3P

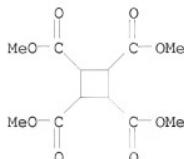
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 22555-07-3 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
cis-2,trans-3,trans-4- (8CI) (CA INDEX NAME)



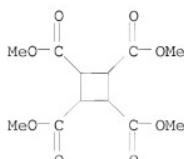
L5 ANSWER 25 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1967:28305 CAPLUS
DOCUMENT NUMBER: 66:28305
ORIGINAL REFERENCE NO.: 66:5335a,5338a
TITLE: Maleic anhydride-hexamethylbenzene mixtures in
methylcyclohexane solution and in the solid state.
II. Photochemical and thermal reactions
AUTHOR(S): Raciszewski, Zbigniew
CORPORATE SOURCE: Union Carbide Corp., South Charleston, WV, USA
SOURCE: Journal of the Chemical Society [Section] B: Physical
Organic (1966), (12), 1147-55
CODEN: JCSBAC; ISSN: 0045-6470
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB cf. preceding abstract A methylcyclohexane solution of maleic anhydride and hexamethylbenzene was irradiated with uv light in the absence and in the presence of filters that confined absorption, either nearly or completely, to the maleic anhydride-hexamethylbenzene charge-transfer complex. In the latter case the reaction mixture also contained toluene in a 6- and 25-fold molar excess over hexamethylbenzene. Pentamethylbenzylsuccinic anhydride and resinous substances were isolated in all expts. but no adducts of toluene with maleic anhydride were found. Evidence was obtained for formation of CO₂ during the irradiation. Uv irradiation of a mixture of maleic anhydride and hexamethylbenzene in the solid state produced 1,2,3,4-cyclobutanetetracarboxylic acid dianhydride (I). No adducts of hexamethylbenzene with maleic anhydride were detected. From a partly carbonized mixture obtained by heating equimolar quantities of maleic anhydride and hexamethylbenzene to 250° for 15.5 hrs. and followed by hydrolysis were isolated pentamethylbenzylsuccinic acid, 4,5,6,7-tetramethylindan-1,2-dicarboxylic acid, and resinous materials. Only 4,5,6,7-tetramethylindan-1,2-dicarboxylic acid and the resins were isolated in a similar experiment but with the heating time extended to 17 hrs. No detectable reaction occurred at 200° over a period of 14 hrs. Large contribution of the dative structure to the electronically excited complex (about 90%) resulted in the proton transfer within the complex to give a geminate pair of free radicals that combined yielding pentamethylbenzylsuccinic anhydride. The course of the photochemical reaction in the solid state reflected the absence of the charge-transfer complex and the limited mobility of the components of the solid matrix. Crystalline products obtained in the thermal reactions probably originated from the addition of the pentamethylbenzyl radical, formed by cleavage of the benzylic C-H bond in hexamethylbenzene, to maleic anhydride.

IT 14495-41-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
INDEX NAME)



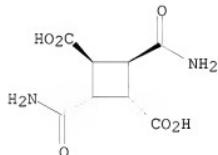
L5 ANSWER 26 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1967:28280 CAPLUS
DOCUMENT NUMBER: 66:28280
ORIGINAL REFERENCE NO.: 66:5327a,5330a
TITLE: Configuration analysis of cyclobutane by N.M.R.
spectroscopy
AUTHOR(S): Weitkamp, Horst; Korte, Friedhelm
CORPORATE SOURCE: Univ. Bonn, Bonn, Germany
SOURCE: Tetrahedron, Supplement (1966), No. 7, 75-87
DOCUMENT TYPE: CODEN: TETSAE; ISSN: 0563-2072
Journal
LANGUAGE: German
AB A detailed analysis of 20 cyclobutanes is given. The magnetic shielding parameters are between τ = 6.2 and 8.2 ppm. depending on the substituents. The effects of the substituents on the shift values for the ring protons were calculated. The geminal and vicinal spin-spin coupling constant have the same size. The geminal coupling constant is opposite in sign to the vicinal ones, and, from theoretical considerations, assumed to be neg. The differences between the cis- and trans-vicinal coupling consts. are often very small, though the ratio J_{cis}/J_{trans} is always larger than 1. The magnitudes are - 11 to -14 cycles/sec. for the geminal, +8 to +12 cycles/sec. for the cis-vicinal, and +8 to +10 cycles/sec. for the transvicinal coupling consts.
IT 14495-41-1
RL: PRP (Properties)
(configuration and N.M.R. of)
RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
INDEX NAME)



L5 ANSWER 27 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

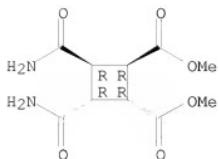
ACCESSION NUMBER: 1966:507417 CAPLUS
 DOCUMENT NUMBER: 65:107417
 ORIGINAL REFERENCE NO.: 65:19967h,19968a-d
 TITLE: Effect of radiation on nucleic acid components. VII.
 Synthesis of uracil trans-dimers
 AUTHOR(S): Doerhoefer, G.; Fahr, E.
 CORPORATE SOURCE: Univ. Wuerzburg, Germany
 SOURCE: Tetrahedron Letters (1966), (37), 4511-16
 CODEN: TELEAY; ISSN: 0040-4039
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 GI For diagram(s), see printed CA Issue.
 AB cf. CA 65, 949h. Tetra-Et trans-cyclobutane tetracarboxylate, prepared by photochem. dimerization of trans-HO₂CCH:CHCO₂H, saponified and treated with Ac₂O gave the anhydride (I), m. 300°. I heated in NH₄OH gave the amido-carboxylic acids (II, R = CONH₂), C₈H₁₀N₂O₆, m. >300° (di-Me ester, m. >300°, prepared by methylation with CH₂N₂). The product was chromatog. unique but on submission to Hofmann degradation gave a very hygroscopic mixture of diaminocyclobutane dicarboxylic acids II (R = NH₂) (III); tolylsulfonate m. 226-8°. II reacted with KCN gave the mixture (IV). IV was less thermally stable than the photochem. prepared cis-(5,5/6,6)dimeric uracil (V) and could not be recrystd. from H₂O. Irradiation with shortwave uv light transformed IV into uracil. Paper chromatog. (7:3 PrOH-H₂O) of IV and V gave the same R_f value but thin-layer chromatog. on silica gel (7:3 PrOH-H₂O) gave R_f 0.50-0.53 for the photochem. prepared dimer V and R_f 0.60-0.63 for the synthetic dimer IV. Alkaline degradation 60 h. in 10 N aqueous NaOH at 50° reconverted IV to III, identified by the tolylsulfonate. The purely chemical synthesis of trans dimeric uracils demonstrated the presence of a cyclobutene system and showed to what extent the trans linkage of the pyrimidine rings in contrast to the cis dimerization by photochem. means, altered the properties of the dimer.
 IT 13375-96-7 13375-97-8 13375-98-9
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 13375-96-7 CAPLUS
 CN 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-,
 cis-1,2,trans-1,3,trans-1,4- (8CI) (CA INDEX NAME)

Relative stereochemistry.



RN 13375-97-8 CAPLUS
 CN 1,2-Cyclobutanedicarboxylic acid, 3,4-dicarbamoyl-, dimethyl ester,
 trans-1,2,trans-1,3,cis-1,4- (8CI) (CA INDEX NAME)

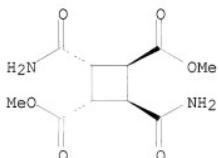
Relative stereochemistry.



RN 13375-98-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-, dimethyl ester,
cis-1,2,trans-1,3,trans-1,4- (8CI) (CA INDEX NAME)

Relative stereochemistry.

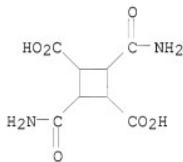


IT 90007-87-7P, 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-
91059-88-0P, 1,2-Cyclobutanedicarboxylic acid, 3,4-dicarbamoyl-,
dimethyl ester 91059-89-1P, 1,3-Cyclobutanedicarboxylic acid,
2,4-dicarbamoyl-, dimethyl ester

RL: PREP (Preparation)
(preparation of)

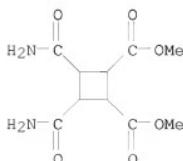
RN 90007-87-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-bis(aminocarbonyl)- (CA INDEX NAME)

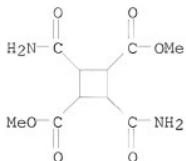


RN 91059-88-0 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-bis(aminocarbonyl)-, 1,2-dimethyl
ester (CA INDEX NAME)



RN 91059-89-1 CAPLUS
CN 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-, dimethyl ester (?CI)
(CA INDEX NAME)



L5 ANSWER 28 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1966:507416 CAPLUS

DOCUMENT NUMBER: 65:107416

ORIGINAL REFERENCE NO.: 65:19967g-h

TITLE: Diazo compounds. XXV. Kinetic studies of the photolysis and of the thermal decomposition of diazomethane in cyclohexane and cyclohexene

AUTHOR(S): Mueller, Eugen; Renner, R.; Rundel, W.

CORPORATE SOURCE: Univ. Tuebingen, Germany

SOURCE: Zeitschrift fuer Naturforschung, Teil B: Anorganische Chemie, Organische Chemie, Biochemie, Biophysik, Biologie (1966), 21(8), 751-5

CODEN: ZENBAX; ISSN: 0044-3174

DOCUMENT TYPE: Journal

LANGUAGE: German

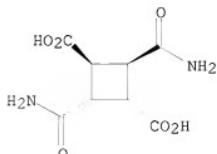
AB cf. CA 64, 19512e. The kinetics of the photolysis of diazomethane (I) in cyclohexane, mixts. of cyclohexane-cyclohexene (molar ratio 25:1), and cyclohexene are identical, indicating a similar mechanism, probably a carbon mechanism; the presence of O accelerates the photolysis of I in cyclohexane by a factor of 6. The thermal decomprn. of I in the dark in cyclohexane is a 1st order reaction with a half life period of 74 hrs. at 25°.

IT 13375-96-7 13375-97-8 13375-98-9
(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 13375-96-7 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-,
cis-1,2,trans-1,3,trans-1,4- (8CI) (CA INDEX NAME)

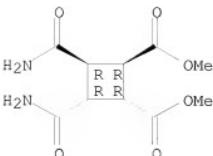
Relative stereochemistry.



RN 13375-97-8 CAPLUS

CN 1,2-Cyclobutanedicarboxylic acid, 3,4-dicarbamoyl-, dimethyl ester,
trans-1,2,trans-1,3,cis-1,4- (8CI) (CA INDEX NAME)

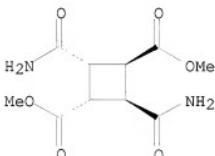
Relative stereochemistry.



RN 13375-98-9 CAPLUS

CN 1,3-Cyclobutanedicarboxylic acid, 2,4-dicarbamoyl-, dimethyl ester,
cis-1,2,trans-1,3,trans-1,4- (8CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 29 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1966:472656 CAPLUS

DOCUMENT NUMBER: 65:72656

ORIGINAL REFERENCE NO.: 65:13490a-d

TITLE: Photochemistry of crystalline dimethyl all-trans-hexatrienel,6-decarboxylate

AUTHOR(S): Lahav, M.; Schmidt, G. M. J.

CORPORATE SOURCE: Weizmann Inst. Sci., Rehovoth, Israel

SOURCE: Tetrahedron Letters (1966), (26), 2957-62

DOCUMENT TYPE: CODEN: TELEAY; ISSN: 0040-4039

Journal

LANGUAGE: English

GI For diagram(s), see printed CA Issue.

AB Di-Me all-trans-hexatriene-1,6-dicarboxylate, I, m. 172° (alc.), irradiated under Pyrex glass 6 days in sunlight ($\lambda > 290 \text{ m}\mu$) and the mixed product chromatographed from a min. amount of CHCl₃ on silica gel, eluted with C₆H₆ to remove I and again with 9:1 C₆H₆-CHCl₃ gave 22% di-Me-trans-1,3-bis[4-(1-carbomethoxy)buta-1-trans,3-trans-dienyl]cyclobutane-2,4-dicarboxylate (II), m. 139-40°. II submitted to ozonolysis in AcOH 2 hrs. and the mixture treated with 20% H₂O₂ gave trans-1,3-dicarbomethoxycyclobutane-trans-2,4-dicarboxylic acid, m. 179-80° (Me₂CO). In the triclinic crystal structure of I, all mols. are likely to be parallel by analogy with the crystal structure of di-Me trans-trans-muconate. Since the unit cell does not have a 4-A. axis the only other sym. dimer to be expected from a topochemically controlled reaction is II. The formation of a cyclodimer from a crystalline hexatriene derivative showed that this solid state reaction occurred with a min. amount of mol. motion since the trans configuration of the triene system was preserved and no other dimers or rearranged monomeric compds. were observed.

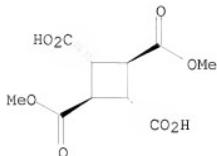
IT 2957-97-3 13160-90-2

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 2957-97-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

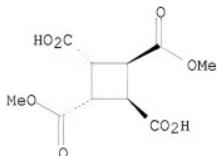
Relative stereochemistry.



RN 13160-90-2 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

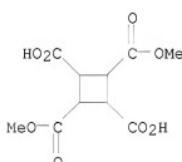
Relative stereochemistry.



IT 22555-07-3P, 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl
ester, trans,trans-
RL: PREP (Preparation)
(preparation of)

RN 22555-07-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
cis-2,trans-3,trans-4- (8CI) (CA INDEX NAME)



L5 ANSWER 30 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1966:472655 CAPLUS

DOCUMENT NUMBER: 65:72655

ORIGINAL REFERENCE NO.: 65:13489h,13490a

TITLE: Vapor phase photochemistry of 1,3-butadiene-1,1,4,4-d4

AUTHOR(S): Haler, I.; Srinivasan, R.

CORPORATE SOURCE: Watson Res. Center, Intern. Business Machines,
Yorktown Heights, NY

SOURCE: Journal of the American Chemical Society (1966),

88(16), 3694-8
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE:
LANGUAGE:

Journal
English

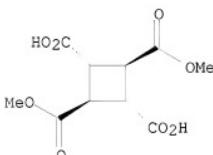
AB The mechanisms of the 3 primary processes in the vapor phase photolysis of 1,3-butadiene were investigated by the use of D labeling on the end C atoms. None of the processes proceeds by the obvious pathway exclusively. Thus, ethylene and acetylene are formed not only by a 1,3 shift but also via an intermediate cyclobutene and a third path which gives C2H2D2 and C2D2. Two mechanisms seem to be applicable to the other 2 primary processes which give 1,2-butadiene and H2 + C4H4, resp.

IT 2957-97-3 13160-90-2
(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 2957-97-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

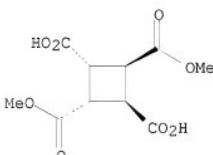
Relative stereochemistry.



RN 13160-90-2 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 α ,3 β ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 31 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1966:465275 CAPLUS
DOCUMENT NUMBER: 65:65275
ORIGINAL REFERENCE NO.: 65:12123f-g
TITLE: Preparation of oximes using a silver chromate and (or)
silver dichromate catalyst
INVENTOR(S): Young, Vernon V.
PATENT ASSIGNEE(S): Commercial Solvents Corp.
SOURCE: 8 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.

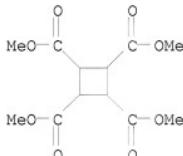
KIND

DATE

APPLICATION NO.

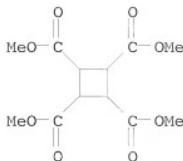
DATE

US 3267142 19660816 US 1964-412334 19611218
 PRIORITY APPLN. INFO.: US 19611218
 AB To a suspension of 17 g. AgNO₃ and 21.5 g. ZnO in 400 ml. H₂O were added solns. of 13 g. (NH₄)₂Cr₂O₇ or 16.2 g. CaCr₂O₇ or 15 g. Na₂Cr₂O₇.2H₂O or 15 g. K₂Cr₂O₇ or 10 g. CrO₃ in 200 ml. H₂O. The solids were filtered off and dried at 100°. Similarly prepared were Ag₂CrO₄ and Ag₂Cr₂O₇ on CaCO₃, Al₂O₃, SiO₂, CaO, CaHPO₄, Ca₃(PO₄)₂, and TiO₂. These catalysts were used for the hydrogenation of nitroparaffins in MeOH at 500-1000 psi. and 135°. Several examples are given for the reduction of nitrocyclohexane which led to C₆H₁₁NH₂, C₆H₁₁NHOH, and C₆H₁₀:NOH. The best yields of oxime were obtained with Ag₂CrO₄-CaCO₃ 1:1 (23.8%) and with Ag₂Cr₂O₇-ZnO 1:1 (29.3%).
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



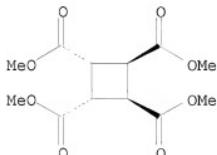
L5 ANSWER 32 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1966:465274 CAPLUS
 DOCUMENT NUMBER: 65:65274
 ORIGINAL REFERENCE NO.: 65:12123f
 TITLE: Isomerization of tetramethyl cis, trans,
 cis-1,2,3,4-cyclobutanetetracarboxylate
 INVENTOR(S): Griffin, Gary W.
 PATENT ASSIGNEE(S): American Cyanamid Co.
 SOURCE: 2 pp.; Division of U.S. 3,139,395 (CA 61, 6937b)
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|----------------|-----------------|------|
| US 3253016 | 19660524 | US 1964-351519 | 19640312 | |
| PRIORITY APPLN. INFO.: | | US | 19640312 | |
| AB | The disclosure is the same but the claims are different. | | | |
| IT 14495-41-1 | (Derived from data in the 7th Collective Formula Index (1962-1966)) | | | |
| RN 14495-41-1 CAPLUS | | | | |
| CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME) | | | | |



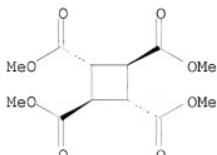
IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis, trans, cis- 3999-67-5P,
 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, trans, trans,
 trans-
 RL: PREP (Preparation)
 (preparation of)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 3999-67-5 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 β ,3 α ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 33 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1966:438196 CAPLUS
 DOCUMENT NUMBER: 65:38196
 ORIGINAL REFERENCE NO.: 65:7072h,7073a
 TITLE: Electrolytic oxidation of cyclobutane-1,3-dicarboxylic acids. An electrochemical synthesis of 2,4-dicarbomethoxybicyclobutane
 AUTHOR(S): Velluro, Anthony F.; Griffin, Gary W.
 CORPORATE SOURCE: Tulane Univ., New Orleans, LA
 SOURCE: Journal of Organic Chemistry (1966), 31(7), 2241-4
 CODEN: JOCEAH; ISSN: 0022-3263

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Anodic oxidation of trans,trans,trans-1,3-dicarboxy-2,4-dicarbomethoxycyclobutane in the Kolbe manner gives 2,4-dicarbomethoxybicyclobutane. In contrast, electrolysis of α -truxilllic acid under similar conditions results in ring contraction and formation of the lactone of cis,cis-1-carboxy-2-(α -hydroxybenzyl)-3-phenylcyclopropane as the major product. A cationic mechanism is invoked to explain the difference in behavior exhibited by these cyclobutane-1,3-dicarboxylic acids.

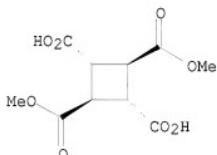
IT 2957-97-3

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 2957-97-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 34 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1966:438195 CAPLUS

DOCUMENT NUMBER: 65:38195

ORIGINAL REFERENCE NO.: 65:7072n

TITLE: 1,5,9-Tridehydro-12-annulene

AUTHOR(S): Sondheimer, F.; Wolovsky, R.; Garratt, P. J.; Calder, I. C.

CORPORATE SOURCE: Univ. Chem. Lab., Cambridge, UK

SOURCE: Journal of the American Chemical Society (1966),

88(11), 2610

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Correction. Isomer B reported (CA 64, 6515e) was shown to be identical with the title compound

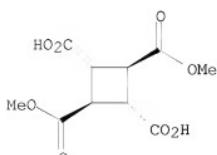
IT 2957-97-3

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 2957-97-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

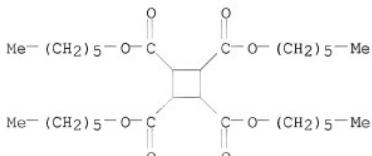
Relative stereochemistry.



LS ANSWER 35 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1966:85300 CAPLUS
 DOCUMENT NUMBER: 64:85300
 ORIGINAL REFERENCE NO.: 64:16081g-h,16082a
 TITLE: Esters of 1,2,3,4-cyclobutanetetracarboxylic acid as plasticizers for resins and rubbers
 INVENTOR(S): Rhum, David; Maggart, Ronald C.; Roper, Robert
 PATENT ASSIGNEE(S): Esso Research and Engineering Co.
 SOURCE: 3 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| US 3236801 | | 19660222 | US 1963-255073 | 19630130 |
| PRIORITY APPLN. INFO.: | | | US | 19630130 |

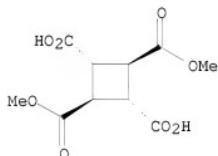
AB Esters of 1,2,3,4-cyclobutanetetracarboxylic acids are prepared by direct esterification of the appropriate 1,2,3,4-cyclobutanetetracarboxylic acid, dianhydride or acid chloride, by transesterification, or by direct dimerization of a dialkyl maleate or fumarate. When used in amts. of 5-150 parts per 100 parts resin, they give improved low-temperature properties, less volatile loss, and a better compatibility-volatility relation. Thus, a mixture of 45 g. tetra-Me 1,2,3,4-cyclobutanetetracarboxylate, 127.5 g. Oxo hexyl alc. and 0.5 g. NaOMe was heated under N to .apprx.140°. After removing most of the alc., the solution was cooled, washed and vacuum stripped to yield tetrahexyl 1,2,3,4-cyclobutanecarboxylate. Fifty parts of this plasticizer was milled into 100 parts of Geon 101 poly(vinyl chloride) containing 2 parts stabilizer. Molded samples gave the following properties (compared with controls containing equal amts. of adipic polyester and dioctyl phthalate): volatility (% plasticizer loss after 7 hrs. at 136°), monomeric tetrahexyl ester 24, adipic polyester 17, dioctyl phthalate 91; % retention of elongation (after 7 hrs. at 136°), monomeric tetrahexyl ester 73, adipic polyester, 76, dioctyl phthalate zero.
IT 7566-44-1, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetrahexyl ester
 (vinyl chloride polymers plasticized by)
RN 7566-44-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetrahexyl ester (CA INDEX NAME)



LS ANSWER 36 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1965:438739 CAPLUS
 DOCUMENT NUMBER: 63:38739
 ORIGINAL REFERENCE NO.: 63:6882b-e
 TITLE: Electrochemical synthesis of a bicyclobutane
 AUTHOR(S): Veilturo, Anthony F.; Griffin, Gary W.

CORPORATE SOURCE: Tulane Univ., New Orleans, LA
 SOURCE: Journal of the American Chemical Society (1965),
 87(13), 3021-2
 CODEN: JACSAT; ISSN: 0002-7863
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 GI For diagram(s), see printed CA Issue.
 AB Electrolysis of trans,trans,trans-1,3-dicarboxy-2,4-dicarbomethoxycyclobutane (I), m. 183-4°, under Kolbe conditions gave 2,4-dicarbomethoxybicyclobutane (II), assumed to be cis, m. 83-5° whose structure was assigned on the basis of its ir and N.M.R. spectra. Further evidence for this structure was obtained by hydrogenation of H over PtO₂ to cis-1,3-dicarbomethoxycyclobutane (III), MeO₂C(CH₂)₄CO₂Me, and MeO₂CH₂CH₂CHMeCO₂Me. trans,trans,trans-I was prepared by ozonolysis of the di-Me ester of α -truxilllic acid and its structure confirmed by conversion to the known trans,trans,trans-1,2,3,4-tetracarbomethoxycyclobutane (IV) on treatment with CH₂N₂. It was established that I was not identical (ir spectrum and mixed m.p.) with trans,trans,trans-1,2-dicarboxy-3,4-dicarbomethoxycyclobutane (V), m. 167-70°, prepared by treating dianhydride VI CA 61, 4233e with 2 equivs. of NaOMe. All attempts to prepare trans,trans,trans-I from VI failed.
 IT 2957-97-3
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 2957-97-3 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
 (1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 37 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1965:438738 CAPLUS
 DOCUMENT NUMBER: 63:38738
 ORIGINAL REFERENCE NO.: 63:6881g-h,6882a-b
 TITLE: Derivatives of tetrahydrodricyclopentadiene in the field of fats. I. Tricyclodecamethanal as starting material
 AUTHOR(S): Kaufmann, H. P.; Grothues, B.
 CORPORATE SOURCE: Deut. Inst. Fettforsch., Muenster, Germany
 SOURCE: Fette, Seifen, Anstrichmittel (1965), 67(4), 249-55
 CODEN: FSASAX; ISSN: 0015-038X
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 GI For diagram(s), see printed CA Issue.
 AB Several derivs. of tricyclodecamethanal (I) were prepared and studied. I 2,4-dinitrophenylhydrazone, m. 144°, was obtained in 43% yield by the usual method. 0.15 mole I in ether solution was treated with dry HCl gas. The mixture was neutralized with K₂CO₃ and extracted with ether, giving a 50% yield of I diethyl acetal, b11 141-3°. By treating I with 1 and 2 moles, respectively, of malonic acid in a pyridine-piperidine solution, β -tricyclodecylacrylic acid (II), m. 157°, and

β -tricyclodecylglutaric acid, m. 179°, were obtained. By removing the crystalline II from the reaction mixture, a sirupy isomer of II, b11

197–200°, could be isolated. From the crystalline II was prepared by the usual method II anilide (66% yield), m. 163°, whereas the sirupy II yielded 95% II anilide, b5 150–60°, and 84% II Me ester, b10 162–5°. The appearance of the II isomers was studied by their catalytic hydrogenation which yielded a mixture of tricyclodecylpropionic acids: a sirupy isomer, b6 166–8°, and a crystalline form, m. 81°. This was taken as evidence that the source of the isomerism lies in the tetrahydropyrocyclopentadienyl ring system. Oxidation with KMnO₄ of the crystalline II yielded tricyclodecylcarboxylic acid (III), m. 114°, whose anilide, m. 143°, was obtained in 41% yield.

The reduction with LiAlH₄ of I yielded a viscous mixture of alcs. which could not be resolved, although a well defined 3,5-dinitrobenzoate derivative, m. 71°, was obtained. By treating III with HN₃, tricyclodecylamine (IV), b11 103°, was isolated in 49% yield; IV N-benzoyl derivative, m. 123°, was prepared in 35% yield.

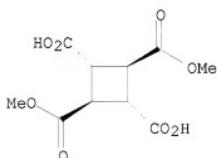
IT 2957-97-3

(Derived from data in the 7th Collective Formula Index (1962–1966))

RN 2957-97-3 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,3-dimethyl ester,
(1 α ,2 β ,3 α ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 38 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1965:82131 CAPLUS

DOCUMENT NUMBER: 62:82131

ORIGINAL REFERENCE NO.: 62:14523b-d

TITLE: New routes into the
cis,trans,cis-tricyclo[5.3.0.002.6]decane series

AUTHOR(S): Buchta, Emil; Merk, Wolfgang

CORPORATE SOURCE: Univ. Erlangen, Nuremberg, Germany

SOURCE: Naturwissenschaften (1965), 52(6), 130

CODEN: NATWAY; ISSN: 0028-1042

DOCUMENT TYPE: Journal

LANGUAGE: German

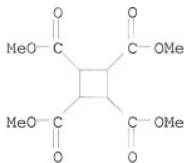
GI For diagram(s), see printed CA Issue.

AB I (R = CO₂E_t), m. 144–5°, reduced with LiAlH₄ in dry tetrahydrofuran gave I (R = CH₂OH, m. 62–4°, which with p-MeC₆H₄SO₂Cl yielded I (R = p-MeC₆H₄SO₂CH₂) (II), m. 126.5–7°. II with NaCH(CO₂E_t)₂ in refluxing xylene gave 82% III (R₁ = R₂ = R₃ = R₄ = CO₂E_t) (IV), b0.03 185–7° m. 66–7.5° (petr. ether). IV reduced with LiAlH₄ in dry tetrahydrofuran gave 75% III (R₁ = R₂ = R₃ = R₄ = CH₂OH), m. 242–4°. Saponification of IV have crude III (R₁ = R₂ = R₃ = R₄ = CO₂H), which decarboxylated at 210–20° yielded a mixture of III (R₁ = R₃ = H, R₂ = R₄ = CO₂H) and III (R₁ = R₄ = H, R₂ = R₃ = CO₂H), m. 250–70° (sealed capillary).

IT 14495-41-1

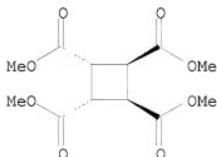
(Derived from data in the 7th Collective Formula Index (1962–1966))

RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)

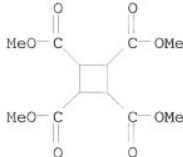


IT 1032-95-7B, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis-
RL: PREP (Preparation)
(preparation of)
RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 39 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1965:82130 CAPLUS
DOCUMENT NUMBER: 62:82130
ORIGINAL REFERENCE NO.: 62:14523a-b
TITLE: Isomerization via transannular enolate anion
AUTHOR(S): Fukunaga, Tadamichi
CORPORATE SOURCE: E. I. du Pont de Nemours & Co., Wilmington, DE
SOURCE: Journal of the American Chemical Society (1965),
87(4), 916-17
CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB A base-catalyzed isomerization reaction of the half-cage ketone (I) to the iso-half-cage ketone (II) was reported. I with tert-BuOK in tert-BuOH in a sealed tube at 250° quant. gave II, containing .apprx.4% I. The ir and N.M.R. spectra of II were discussed.
IT 14495-41-1
(Derived from data in the 7th Collective Formula Index (1962-1966))
RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 40 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1965:73878 CAPLUS

DOCUMENT NUMBER: 62:73878

ORIGINAL REFERENCE NO.: 62:13056c-h,13057a-b

TITLE: Synthesis of cyclobutane derivatives from unsaturated fatty acid esters. Photochemical reactions of muconic acid dimethyl ester and sorbic acid methyl ester

AUTHOR(S): Kaufmann, Hans P.; Sen Gupta, Achintya K.

CORPORATE SOURCE: Deut. Inst. Fettforsch., Muenster, Germany

SOURCE: Justus Liebigs Annalen der Chemie (1965), 681, 39-44

CODEN: JLACBF; ISSN: 0075-4617

DOCUMENT TYPE: Journal

LANGUAGE: German

GI For diagram(s), see printed CA Issue.

AB Irradiation of muconic acid di-Me ester (I) and sorbic acid Me ester (II) in C6H6 in the presence of Ph2CO gave cyclobutane derivs. along with cis,-trans isomers. trans,trans-I (10.5 g.) suspended in 1 l. absolute C6H6 containing 2 g. Ph2CO irradiated 40 h. at 20° with a Hg high pressure burner (200-w.) with stirring and exclusion of O in a Jena glass flask, and the solution worked up gave 2.2 g. unchanged trans,trans-I, m. 157°, 1.99 g. Ph2CO, m. 48°, 142 mg. cis,cis-I, m. 75°, 201 mg. solid, m. 55°, 210 mg. cis,trans-I, m.

75°, 658 mg. trans,trans-I, m. 158°; 28 mg. unidentified

oil, 6.92 g. III and IV, oil, and 130 mg. unidentified oil. Cis,cis-I was (III)(R = CO2Me, R1 = CH:CHCO2Me) (V)(R = CO2H, R1 = CH:CHCO2H) (VI)(R = R1 = CO2H) (VIII)(R = CO2Me, R1 = CH:CHMe (X)(R = Me, R1 = CH:CHCO2Me) (IV)(R = R2 = CO2Me, R1 = R3 = CH:CHCO2Me) (VII)(R = R2 = CO2H, R1 = R3 = CH:CHCO2H) (IX)(R = Me, R1 = CH:CHMe, R2 = CO2Me, R3 = CH:CHCO2Me) saponified to cis, cis-muconic acid, m. 184°, which treated with H2SO4 gave γ-carboxymethyl-8α,β-crotonolactone, m.

110°. cis,cis-I heated 4 h. in H2O gave cis,trans-I, m. 75°.

cis,-trans-I was converted into trans,trans-I, m. 158°, by irradiating its MeOH solution in the presence of a trace of iodine. The III-IV mixture above in 50 cc. Et20 kept 16 h. at -30° and the precipitate (3.39 g.) filtered [the filtrate (A) was kept] and recrystd. twice from MeOH gave III, m. 43°. III (1 g.) refluxed 8 h. with 20 cc. 10% MeOH-NaOH, the solution diluted with H2O and extracted exhaustively with

EtOAc, the

extract dried and evaporated in vacuo, and the residue (0.6 g. V) in 150 cc. 2% aqueous NaOH treated portion-wise with KMnO4 during .apprx. 4 h. at the b.p. and worked up gave 185 mg. trans,trans,trans-VI, m. 260-4° (Me2CO petr. ether); tetra-Me ester (via CH2N2) m. 126-7° (C6H6-petr. ether). Filtrate A gave trans,trans,trans-IV, m. 57-8° (aqueous MeOH), saponified (8 h. reflux with 10% MeOH-NaOH) to trans,trans,trans-VII, m. 245° (decomposition) (EtOAc-Me2CO-petr. ether), which (0.5 g.) oxidized with KMnO4 as above gave 185 mg. trans,trans,trans-VI, m. 260-4° (Me2CO-petr. ether). trans,trans-II (20 g.) in 2 l. absolute C6H6 containing 5 g. Ph2CO irradiated like I 100 h. at 20° with stirring and worked up gave 14.7 g. unchanged crude trans, trans-II, 5.0 g. Ph2CO, trans,trans,trans-VIII (1.88 g. crude), colorless oil, n20D 1.4796, mol. weight (cryoscopic in C6H6) 246, saponification number 438, 441

[trans,trans,trans-VIII (1 g.) saponified by alkali and the oily saponification product oxidized with alkaline KMnO₄ as above gave 168 mg. trans,trans,trans-VI, m. 262°], trans,trans,trans-IX (0.99 g. crude), colorless oil, n_{20D} 1.4841, mol. weight (cryoscopic in C₆H₆) 249, saponification number 440.9 [trans,trans,trans-IX (0.5 g.) saponified and subsequently

oxidized with KMnO₄ gave 43 mg. trans,trans,trans-VII], and trans,trans,trans-X (2.51 g. crude), b_{0.15} 89-92°, mol. weight (cryoscopic in C₆H₆) 248.6, saponification number 442.4, which (1 g.) saponified and

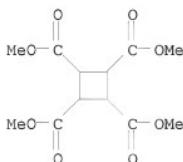
oxidized with KMnO₄ gave 40 mg. trans,trans,trans-VI, m. 260-4°.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



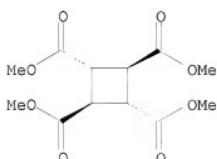
IT 3999-67-5P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, trans,trans,trans-

RL: PREP (Preparation)
(preparation of)

RN 3999-67-5 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 β ,3 α ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 41 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1965:73877 CAPLUS

DOCUMENT NUMBER: 62:73877

ORIGINAL REFERENCE NO.: 62:13056b-c

TITLE: Substituted cyclopropanones

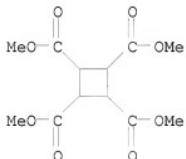
AUTHOR(S): Breslow, Ronald; Altman, L. J.; Krebs, Adolf; Mohacs, Erno; Murata, Ichiro; Peterson, Ruth A.; Posner, Judd

CORPORATE SOURCE: Columbia Univ.

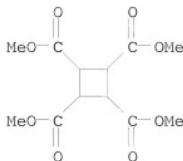
SOURCE: Journal of the American Chemical Society (1965), 87(6), 1326-31

CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE: Journal

LANGUAGE: English
 OTHER SOURCE(S): CASREACT 62:73877
 AB Dipropylcyclopropenone (I) may be synthesized by addition of dichlorocarbene to dipropylacetylene; under some conditions a cyclobutene derivative is also formed. Elimination of HBr from bis(bromobutyl) ketone also affords I, along with a cyclopentenone derivative. The same HBr elimination route has been used to prepare dibutylcyclopropenone, cycloheptenocyclopropenone, and cycloundecenocyclopropenone. Properties and reactions of these compds. and synthetic approaches to other cyclopropenones are described.
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 42 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1965:15312 CAPLUS
 DOCUMENT NUMBER: 62:15312
 ORIGINAL REFERENCE NO.: 62:2769b-e
 TITLE: Photochemical studies. II. Structure of the photodimers of carbostyryl and N-methylcarbostyryl
 AUTHOR(S): Buchardt, O.
 CORPORATE SOURCE: Univ. Copenhagen
 SOURCE: Acta Chemica Scandinavica (1964), 18(6), 1389-96
 DOCUMENT TYPE: CODEN: ACHSE7; ISSN: 0904-213X
 Journal
 LANGUAGE: English
 GI For diagram(s), see printed CA Issue.
 AB cf. CA 59, 13946a. Chemical and spectroscopic evidence show that the dimers of carbostyryl and N-methylcarbostyryl have the trans-head-head-cyclobutane structures (I, R = H and II, R = Me), resp. The dimers I (R = H) and II (R = Me) were ozonized and oxidized with H2O2 and the products were hydrolyzed with dilute HCl and methylated directly to yield, in both cases, tetramethyl cis-trans-cis-cyclobutanetetracarboxylate. Attempts to methylate I (R = H) to give II (R = Me) were unsuccessful so that the two compds. were interrelated as follows. I (R = Me) was reduced with LiAlH4 in Et2O to give II (R = Me), m. 184-5°; monomethiodide m. 185-6°; dimethiodide m. 260-70°. Reduction of I (R = H) with LiAlH4 gave II (R = H), m. 125-6°, which on treatment with MeI and then aqueous KOH gave II (R = Me). The trans-head-head configuration in both compds. was established by measurement of dipole moments in C6H6 [2.53 D. for II (R = H) and 5.28 D. for I (R = Me)].
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)

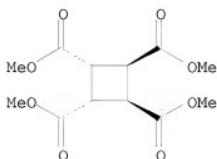


IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, *cis,trans,cis-*
RL: PREP (Preparation)
(preparation of)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 43 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1964:440150 CAPLUS

DOCUMENT NUMBER: 61:40150

ORIGINAL REFERENCE NO.: 61:6937c-d

TITLE: Purification of nitrocyclohexane

INVENTOR(S): Chandler, Ollie W.

PATENT ASSIGNEE(S): Commercial Solvents Corp.

SOURCE: 2 pp.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|------|-----------------|------|
|------------|------|------|-----------------|------|

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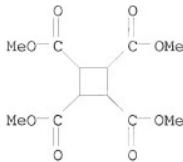
US 3132183 19640505 US

AB To a 600 g. portion of the crude product from the nitration of cyclohexane consisting of 94.7% nitrocyclohexane (I) with cyclohexanone, cyclohexyl nitrate, and nitrocyclohexane as impurities, was added 100 g. of 96% H2SO4 at such a rate as to give a final temperature of 70°. The mixture was held at 70° with thorough agitation 3 hrs. After the addition of 100 ml. of H2O, the mixture was steam distilled at atmospheric pressure to give 540 g. product containing 99.5% I. Cf. Smiley, CA 53, 2243b.

IT 14495-41-1
(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 44 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1964:440149 CAPLUS

DOCUMENT NUMBER: 61:40149

ORIGINAL REFERENCE NO.: 61:6937b-c

TITLE: Photodimerization of fumaric acid derivatives

INVENTOR(S): Griffin, Gary W.

PATENT ASSIGNEE(S): American Cyanamid Co.

SOURCE: 2 pp.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| US 3139395 | | 19640630 | US 1961-81224 | 19610109 |
| PRIORITY APPLN. INFO.: | | | US | 19610109 |

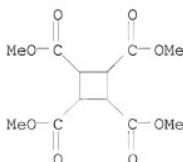
AB Cyclobutanetetracarboxylic acid or their Me esters are made by subjecting a solid layer of di-Me fumarate to light waves of 1750-4000 Å. The cyclobutane dianhydride can be made by a similar method from maleic anhydride irradiated in the solid state. Thus, a solution of di-Me fumarate in CH₂Cl₂ is deposited on the inside wall of a glass cylinder, the CH₂Cl₂ evaporated, and a lamp inserted in the cylinder. Irradiation is maintained for 24 hrs. with cooling to give 59% the tetramethyl ester of cis, trans, cis-1,2,3,4-cyclobutanetetracarboxylic acid, m. 144-5°. Also prepared were cis,trans,cis-1,2,3,4-tetracyanocyclobutane, m. 250° (decomposition), 1,2,3,4-cyclobutanetetracarboxylic acid dianhydride, and tetra-Me trans,trans,trans-1,2,3,4-cyclobutanetetracarboxylate, m. 123-5°.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)

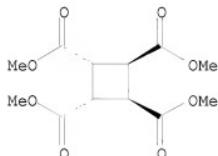


IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis, trans, cis- 3999-67-5P,

1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, trans, trans,

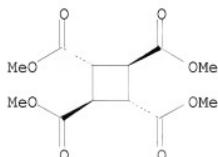
trans-
RL: PREP (Preparation)
(preparation of)
RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 3999-67-5 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 β ,3 α ,4 β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 45 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1964:425032 CAPLUS
DOCUMENT NUMBER: 61:25032
ORIGINAL REFERENCE NO.: 61:4233e-h,4234a-b
TITLE: Reductive cleavage of tetrasubstituted cyclobutanes:
possible examples of homolytic fragmentations
AUTHOR(S): Griffin, G. W.; Hager, R. B.
CORPORATE SOURCE: Yale Univ.
SOURCE: Rev. Chim., Acad. Rep. Populaire Roumaine (1962),
7(2), 901-6
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB cf. CA 57, 16417d. Several possible examples of homolytic fragmentation of
tetrasubstituted cyclobutanes were considered, employing Mg-MgI₂ in THF
(in ether-benzene the mixture was inactive) and Na in liquid NH₃ for the
reductive cleavage. Reduction of trans,trans,trans-1,2,3,4-
tetrabenzoylcyclobutane (Ia) with Mg-MgI₂ and subsequent hydrolysis gave
high yields (61%) of dibenzoylethane instead of the expected intramol.
pinacol reduction, with a dienolate (II) presumed as initial product.
Reduction
of trans,trans,trans-1,2,3,4-tetracarbomethoxycyclobutane (Ib) with Na and
hydrolysis gave only di-Me succinate (25% yield) while similar treatment
of the cis,trans,cis-1,2,3,4-tetracarbomethoxycyclobutane (III) gave the
same di-Me succinate (23%). Similar treatment of the tetraketone (Ic)

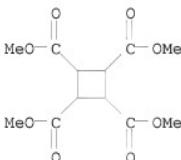
gave 2,5-hexanedione (53%) as major product and of the dioxodiester (Id), both 2,5-hexanedione (24%) and di-Me succinate (4%) and some Me levulinate (IV) (12%). Details were presented on the preparation of (Ic) and the unusual cage dianhydride (VI). The tetraketone (Ic), m. 139-40°, was prepared in 57% yield from the tetradiazoketone (V) by the action of HI in CHCl₃. VI, m. 280° (decomposition), was prepared in 65% yield by treatment of Ie with Ac₂O. Methanolysis of VI afforded Ig, and conversion of the latter through its acid chloride and diazoketone gave the trans,trans,trans-1,2-diacetyl-3,4-dicarbomethoxycyclobutane (Id), m. 81-2°, in 83% yield from VI. Dibenzoylethane was cleaved under similar conditions to give a low yield of acetophenone and 1,2-diphenyl-1,2-dihydroxycyclobutane, m. 147-50°. A photochem. reductive cleavage of Ia to dibenzoylethane was accomplished by irradiating in benzene in Pyrex glass vessels in the presence of benzophenone as photosensitizer. The same photosensitizer was used for photochem. reduction of dibenzoylethylene, using iso-PrOH, cyclohexane, or SnBu₃H as H donors. Several possible interpretations were presented on the mechanism of the apparently general cleavage reaction. 28 refs.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



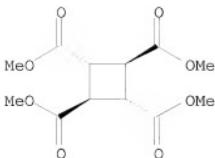
IT 1032-95-7, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis- 3999-67-5,
1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
trans,trans,trans-
(reductive cleavage of)
RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3β,4β)- (CA INDEX NAME)

Relative stereochemistry.



RN 3999-67-5 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2β,3α,4β)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 46 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1964:425031 CAPLUS

DOCUMENT NUMBER: 61:25031

ORIGINAL REFERENCE NO.: 61:4233d-e

TITLE: Cyclobutane compounds. I. Formation of a four-membered ring during the electrophilic addition of hydrogen bromide to allene

AUTHOR(S): Griesbaum, Karl

CORPORATE SOURCE: Esso Res. & Eng. Co., Linden, NJ

SOURCE: Journal of the American Chemical Society (1964), 86(11), 2301-3

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

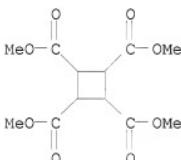
AB The reaction of equimolar ams. of HBr and CH₂:C:CH₂ (I) produced (yields from gas-liquid chromatography) 13% CH₂:CBrMe, 35% Me₂CBr₂, 44% trans-1,3-dibromo-1,3-dimethylcyclobutane (II), m. 54-5°, δ 2.13 (singlet) and 3.19 (singlet) p.p.m., and 8% cis-1,3-dibromo-1,3-dimethylcyclobutane (?). Reduction of II with Bu₃SnH produced a mixture of cis- and trans-1,3-dimethylcyclobutane. The formation of II represented the first example of a cationically induced cyclodimerization of I.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 47 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1964:52579 CAPLUS

DOCUMENT NUMBER: 60:52579

ORIGINAL REFERENCE NO.: 60:9210e-h,9211a

TITLE: Investigations in the cyclobutane series. XII. Two stereoisomeric dimers of cyclobutadiene

AUTHOR(S): Avram, Margarete; Dinulescu, Ilie G.; Marica, Elise; Mateescu, Georg; Sliam, Elvira; Nenitzescu, Costin D.

CORPORATE SOURCE: Acad. R. V. R., Bucharest, Rom.
 SOURCE: Chemische Berichte (1964), 97(2), 382-9
 CODEN: CHEBAM; ISSN: 0009-2940
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 OTHER SOURCE(S): CASREACT 60:52579
 GI For diagram(s), see printed CA Issue.
 AB The elimination of Cl from cis-3,4-dichlorobutene (I) with Na-Hg in Et₂O yielded syn-tricyclo[4.2.0.0.2.5]octa-3,7-diene (III). I with Li-Hg gave similarly predominantly the anti isomer (III') of II. The ozone cleavage and several derivs. of II and III are described. I in Et₂O shaken 40 hrs. with 0.5% Na-Hg, and the solution treated with saturated aqueous AgNO₃ yielded 46-51% AgNO₃ complex (IV) of II, m. 138-40°. IV shaken at 0° with saturated aqueous NaCl yielded 65-9% II, b₄₀ 45°, containing 2-3% cyclooctatetraene (V). I in Et₂O shaken 8-10 hrs. with 0.5% Li-Hg, and the solution shaken with saturated aqueous AgNO₃ gave 55% AgNO₃-complex (VI) of III,
 m. 152° (EtOH). VI shaken at 0° with saturated aqueous NaCl yielded 51% III, b₄₀ 40°, m. .apprx.-15°. II in 90% AcOH ozonized 8 hrs. and treated 36 hrs. with 30% H₂O₂ yielded 77% all-cis-1,2,3,4-tetracarboxymethoxycyclobutane (VII), m. 202°. III yielded similarly 85% cis-trans-trans-isomer of VII, m. 147° (C₆H₆). III in MeOH hydrogenated over 30% Pd-C yielded anti-tricyclo[4.2.0.0.2.5]-octane (VIII), b₃₀ 53°. VIII heated 8-10 hrs. under argon at 150° gave 39% dimeric 1,5-cyclooctadiene (IX), m. 121° (sealed capillary), and a liquid hydrocarbon C₈H₁₂, isolated as the yellow PdCl₂ complex, m. 205-10° (decomposition) (AcOH). II hydrogenated similarly gave the syn isomer (X) of IX, which, rearranged thermally, yielded 12.5% IX. II in CH₂Cl₂ treated at 0° with Br gave 77% 3,4,7,8-tetra-Br derivative (XI) of X, pale yellow viscous liquid, which deposited on standing a hexabromide, m. 168° (MeOH). III yielded similarly 94% 3,4,7,8-tetra-Br derivative (XII) of XI, m. 172° (heptane). XII in Et₂O shaken 10 hrs. with 0.5% Li-Hg gave 52% III. XII in PhCl heated 2 hrs. at 130-40° gave 77.5% C₈H₈Br₄, m. 136-7° (AcOH). XII and 2,5-diphenyl-3,4-benzofuran (XIII) in Et₂O shaken 16 hrs. with 0.5% Li-Hg, the precipitate treated with maleic anhydride, and the product refluxed 15 min. with 5% KOH-MeOH yielded 43% adduct, m. 252°. 1,2,3,4-Tetrabromocyclobutane, XIII, and 0.5% Li-Hg in Et₂O yielded similarly 6% adduct, m. 288-90° (AcOH). The infrared absorption spectra of II, III, VIII, and X are recorded.

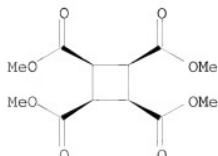
IT 31351-41-4P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
 (Investigations in the cyclobutane series. XII. Two stereoisomeric
 dimers of cyclobutadiene)

RN 31351-41-4 CAPLUS

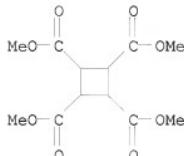
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1a,2a,3a,4a)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



IT 14495-41-1P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl

ester, stereoisomers
RL: PREP (Preparation)
(preparation of)
RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
INDEX NAME)



L5 ANSWER 48 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1963:435251 CAPLUS

DOCUMENT NUMBER: 59:35251

ORIGINAL REFERENCE NO.: 59:6273e-h,6274a

TITLE: The tricyclo[5.3.0.02,6]decane system. Photodimers of cyclopentenone

AUTHOR(S): Eaton, Philip E.

CORPORATE SOURCE: Univ. of California, Berkeley

SOURCE: Journal of the American Chemical Society (1962),
84(12), 2344-8

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

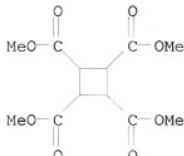
LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 59:35251

GI For diagram(s), see printed CA Issue.

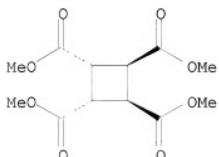
AB The photodimers of cyclopentenone (I) were shown to be II and III. II was converted by 2 paths into cis,trans,cis-tricyclo[5.3.0.02,6]deca-4,9-diene-3,8-dione (IV). The cis,trans,cis assignment for II, III, and other derivs. was based partially on NMR data. Irradiation of I 24 h. with a Hg arc lamp through Pyrex glass gave 43-49% II, m. 125-6.5° (sublimed at 0.5 mm. and crystallized from CH₂C₁₂-hexane) and 37-45% III, m. 66-7° (hexane). Wolff-Kishner reduction of II and III gave cis,trans,cis-tricyclo[5.3.0.02,6]decano, identified by gas chromatog. II with monoperoxyphthalic acid in ether yielded 60% V, m. 156-7° (C₆H₆-CC₁₄). III similarly gave 55% VI, m. 103-5°. Methanolysis of V over polystyrenesulfonic acid resin was accomplished without rearrangement to give putative 1,3-bis(2-carbomethoxyethyl)cyclobutane-2,4-diol, λ 2.87 (OH), 5.77 μ (ester CO), which reverted to V on attempted distillation. VI similarly yielded 1,2-bis(2-carbomethoxyethyl)cyclobutane-3,4-diol, oxidizable with Pb(OAc)₄. II with isopropenyl acetate and p-MeC₆H₄SO₃H gave 58 (crystallized from hexane) or 26% (chromatographed on neutral Al₂O₃) dienol acetate (VII), m. 95-6°, which with Na₂CO₃ in aqueous MeOH reverted to II. VII (16.00 g.) in CH₂C₁₂ at -65° with 20.65 g. Br yielded 13.4 g. putative tetrabromide, which with tert-BuOK in tert-BuOH refluxed overnight yielded 36% IV, m. 231-3°. II with (HOCH₂)₂ and HCl gave 91% bis(ethylene ketal), m. 143-3.5°, which (54.5 g.) in THF with 174 g. pyridinium bromide perbromide yielded 54% dibromo derivative (VIII), m. 200° (decomposition). VIII with tert-BuOK in Me₂SO (not in tert-BuOH) gave 84% bis(ethylene ketal), m. 177-8° (hexane), of IV, which with 0.1N HCl in THF yielded 91% IV. Hydrogenation of IV in AcOH over Pd-C yielded II. IV in aqueous AcOH with ozone and then H₂O₂ followed by treatment with CH₂N₂ afforded 28% cis,trans,cis-tetracarbomethoxycyclobutane, m.

143-4°. NMR spectra of IV-VI were given.
IT 14495-41-1
(Derived from data in the 7th Collective Formula Index (1962-1966))
RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis-
RL: PREP (Preparation)
(preparation of)
RN 1032-95-7 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 49 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1963:435250 CAPLUS
DOCUMENT NUMBER: 59:35250
ORIGINAL REFERENCE NO.: 59:6273a-e
TITLE: Behavior of norbornadiene and its 7-alkoxy derivatives towards organolithium reagents
AUTHOR(S): Wittig, Georg; Otten, Joachim
CORPORATE SOURCE: Univ. Heidelberg, Germany
SOURCE: Tetrahedron Letters (1963) 601-6
CODEN: TELEAY; ISSN: 0040-4039
DOCUMENT TYPE: Journal
LANGUAGE: German
GI For diagram(s), see printed CA Issue.
AB cf. CA 55, 8455c. Treatment of norbornadiene (I) in Et₂O with PhLi under various conditions gave the metalated product (II), the 2 addition compds. (III, IV, R = Li, R' = Ph) and dimeric norbornadiene, b16 121-4°, m. 33°, consisting of a mixture of 2 isomeric compds. The reaction of I with organolithium compds., R'Li, took place relatively slowly, in days at room temperature and in 24 hrs. at 70° and was still more retarded in petr. ether. I treated 6 days with Me₂CHLi in petr. ether at 20° and the mixture hydrolyzed yielded 50% IV (R = H, R' = Me₂CH) together with 34% I. Similarly, I treated 2 days in petr. ether at

20° with Me₃CLi gave 62% IV (R = H, R' = Me₃C) and unchanged I. On the contrary, the addition of R'Li in petr. ether at -20° and hydrolysis of the precipitated material yielded 87% product (VII, R = CMe₃, R'

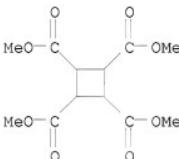
= Me₂CH), b13 91°, n_{20D} 1.4558, and 91% VII (R = CMe₃, R' = Me₃C), b13 106°, n_{20D} 1.4616. The mixture prior to hydrolysis heated 2 hrs. at 100° gave VIII (R = Me₂CH) (IX), b60 76°, n_{25D} 1.4661, and 60% VIII (R = Me₃C), b20 64°, n_{20D} 1.4718. IX hydrogenated in the presence of prereduced PtO₂ with adsorption of 1.98 moles H gave 7-isopropylnorbornane, b. 165°, n_{20D} 1.4580, identical with material prepared by treatment of 7-bromonorbornane with Me₂CHBr and Na. Similarly, V (R = Me) treated with Me₂CHLi in petr. ether gave an adduct, hydrolyzed to yield 94% VII (R = Me, R' = Me₂CH). The mixture heated prior to hydrolysis gave about 50% VIII (R' = Me₂CH). V(R = Me₃C) (VI) in moist Et₂O saturated with dry HCl gave 68% VIII (R' = Cl), b13 46°, n_{25D} 1.5060, m. -16 to -14°, refluxed 4 hrs. in MeOH to give 68% V (R = Me), b18 44°, n_{20D} 1.4792. VI treated with MeOH or Et₂OH in the presence of a trace of HClO₄ yielded 66% V (R = Me) and 82% V (R = Et), resp. The structure of the 7-substituted norbornadienes was conformed by the nuclear magnetic resonance signals for olefin H, bridgehead H, bridge H, and other H atoms: VIII, R = Me₂CH, 3.27, 3.49, 6.64, 7.80-8.90, 9.22, 9.31; VIII, R = Me₃C, 3.14, 3.60, 6.58, 7.58, 9.21; VIII, R = Cl, 3.26, 3.40, 6.38, 5.83; V, R = Me, 3.45, 3.59, 6.54, 6.88; V, R = Et, 3.44, 3.59, 6.38-6.92, 8.93. The above observations suggest that the reactions take place through the 7-norbornadienyl cation (Winstein and Ordroneau, CA 55, 43831).

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 50 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1963:72985 CAPLUS

DOCUMENT NUMBER: 58:72985

ORIGINAL REFERENCE NO.: 58:12431g-h

TITLE: The photodimerization of monomethyl fumarate

AUTHOR(S): Sadeh, T.; Schmidt, G. M. J.

CORPORATE SOURCE: Weismann Inst. Sci., Rehovoth, Israel

SOURCE: Journal of the American Chemical Society (1962), 84, 3970

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

AB Ultraviolet irradiation of a powdered sample of monomethyl fumarate yielded the dimer (I), m. 153-4°. Treatment with SOC₁₂ gave its anhydride, m. 144°. Treatment of both the material and its anhydride with methanolic HCl gave tetramethyl cyclobutane-1,2,3,4-tetracarboxylate m. 144-5°. The conformation of the dimer of monomethyl fumarate was

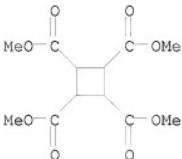
therefore established as having symmetry m, the two acid groups being cis to each other and trans to the two ester groups.

IT 14495-41-1P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
(The photodimerization of monomethyl fumarate)

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
INDEX NAME)



L5 ANSWER 51 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1962:473604 CAPLUS

DOCUMENT NUMBER: 57:73604

ORIGINAL REFERENCE NO.: 57:14619b-d

TITLE: Mechanism of formation of basic amino acids
(ornithine) and hydroxyamino acids (serine,
homoserine) by photochemical synthesis

AUTHOR(S): Ferrari, G.; Passera, C.

CORPORATE SOURCE: Univ. Padua, Italy

SOURCE: Photochemistry and Photobiology (1962), 1, 155-8

CODEN: PHCBAP; ISSN: 0031-8655

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

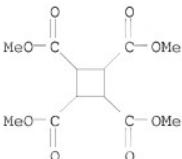
AB Dicarboxylic diamino acids, monocarboxylic diamino acids, and hydroxyamino acids were synthesized in a study of the action of ultraviolet rays on diluted solns. of inorg. N compds. and ternary organic substances. Hydroxyamino acids are formed by recombination of OH radicals from H₂O₂ with amino-group-containing radicals from primary amino acids. α,δ-Diaminoadipic acid, arising by recombination of amino-group-containing radicals from aspartic acid, yields ornithine by further photochem. decarboxylation. The mechanism of formation is discussed.

IT 14495-41-1

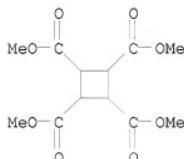
(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
INDEX NAME)

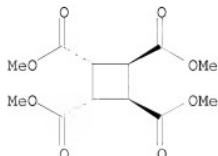


L5 ANSWER 52 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1962:473603 CAPLUS
 DOCUMENT NUMBER: 57:73603
 ORIGINAL REFERENCE NO.: 57:14619a-b
 TITLE: Synthesis of γ -keto acids by photochemical reaction
 AUTHOR(S): Odaira, Yoshinobu; Tominaga, Tamotsu; Pak, Cheng King;
 Tsutsumi, Shigeru
 SOURCE: Technology Reports of the Osaka University (1962),
 12(Nos. 488-507), 193-7
 CODEN: TROUAI; ISSN: 0030-6177
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB The photochem. addition reactions of some aldehydes and di-Me fumarate(I) and maleate (II) were studied. Thus, 4-oxoheptanoic acid was prepared from 2 moles butyraldehyde and 1 mole II, exposed to a lowpressure Hg lamp at room temperature for 100 hrs. Increase in the mole ratio of aldehyde to ester increased the formation of the 1:1 ketodiester adduct except in the case of HCHO. Irradiation of I in the solid state yielded a photodimer identified as cis,trans,cis-1,2,3,4-tetracarbomethoxycyclobutane.
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



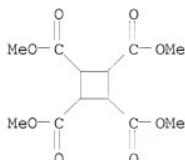
IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis-
 RL: PREP (Preparation)
 (formation by irradiation of di-Me fumarate)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 53 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1962:436298 CAPLUS
 DOCUMENT NUMBER: 57:36298

ORIGINAL REFERENCE NO.: 57:7239c-h
 TITLE: Photosensitized cyclodimerization of coumarin
 AUTHOR(S): Schenck, Guenther Otto; Wilucki, Iugeborg v.; Krauch,
 Carl Heinrich
 CORPORATE SOURCE: Max-Planck-Inst. Kohleforschung, Muehlheim, Germany
 SOURCE: Chemische Berichte (1962), 95, 1409-12
 CODEN: CHBEAM; ISSN: 0009-2940
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 OTHER SOURCE(S): CASREACT 57:36298
 GI For diagram(s), see printed CA Issue.
 AB Coumarin (I) without sensitization yielded II, with sensitization III and IV, upon irradiation. The 2 reactions do not have common intermediates. I (29 g.), m. 67-70°, and 5 g. BzPh, m. 48°, in 250 cc. C6H6 irradiated 60 hrs. at 10-15° gave 27.9 g. III, m. 176.5° (EtOH, C6H6, AcOH and sublimed in vacuo); the mother liquor yielded 0.45 g. IV, m. 320-5° (sublimed); 4.57 g. BzPh was recovered. I (29 g.) in 250 cc. C6H6 irradiated 125 hrs. in glass or 45 hrs. in quartz gave only unchanged I. I (12.3 g.) in 110 cc. absolute EtOH irradiated 46 hrs. gave 1.17 g. II, m. 260° (decomposition) (AcOH and sublimed in vacuo). I (11.54 g.) and 3.08 g. BzPh in 150 cc. absolute EtOH irradiated 16 hrs. yielded 2.2 g. III. I (135 g.) irradiated 30 hrs. at 71-5° with an immersed quartz lamp gave 0.45 g. I. III (13 g.) in 700 cc. 80% AcOH ozonized 110 hrs. at 15° with about 25 g. O3/hr., treated with cooling with 250 cc. 10% H2O2, kept 2 days, evaporated, the residue treated with Et20-CH2N2, and chromatographed on silica gel yielded 70.8% tetra-Me cis-trans-cis-eyelobutanetetracarboxylate, m. 144.5°. III (3 g.) in 50 cc. 10% aqueous NaOH acidified with 10% HCl and filtered gave 3.5 g. dihydroxy- μ -truxinic acid (V), m. 175° after melting with bubbling at 95° and resolidification at 150°. V refluxed 2 hrs. with Ac2O gave III. V (3.32 g.) and CH2N2-Et2O yielded 3.2 g. di-Me ester of V, m. 160° (decomposition). III (5 g.) with 9 g. Me2SO4 in 41 cc. 2N NaOH yielded 3.04 g. Me ester (VI) of dimethoxy- μ -truxinic acid (VII), m. 137-8° (decomposition) (MeOH); the filtrate from the VI acidified with 10% HCl gave 3.07 g. VII, m. 200° (decomposition) (aqueous MeOH).
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis-
 RL: PREP (Preparation)
 (preparation of)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 54 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1962:429516 CAPLUS

DOCUMENT NUMBER: 57:29516

ORIGINAL REFERENCE NO.: 57:5853f-g

TITLE: Preparation of some 2,3:6,7-dibenzobiphenylenes

AUTHOR(S): Bruce, J. Malcolm

CORPORATE SOURCE: Univ. Manchester, UK

SOURCE: Journal of the Chemical Society (1962) 2782-5

CODEN: JCSOA9; ISSN: 0368-1769

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

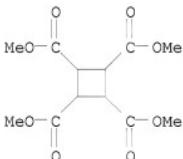
AB The photodimer (I) of 1,4-naphthoquinone was converted into 1,4,5,8-tetrahydroxy-2,3:6,7-dibenzobiphenylene, and the tetramethyl ether and tetraacetate of this compound were prepared. Evidence is presented concerning structure of the enolic form of the photodimer (II) of 2,3-dimethyl-1,4-benzoquinone.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis-

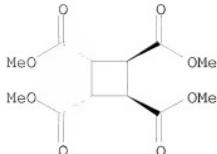
RL: PREP (Preparation)

(preparation of)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, (1a,2a,3β,4β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 55 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1962:429515 CAPLUS

DOCUMENT NUMBER: 57:29515

ORIGINAL REFERENCE NO.: 57:5853e-f

TITLE: Condensed cyclobutane aromatic compounds. XXI. Adducts of benzocyclobutadienes with 1,3-diphenylisobenzofuran

AUTHOR(S): Cava, M. P.; Pohlke, R.

CORPORATE SOURCE: Ohio State Univ., Columbus, OH, USA

SOURCE: Journal of Organic Chemistry (1962), 27(5), 1564-7
CODEN: JOCEAH; ISSN: 0022-3263

DOCUMENT TYPE: Journal

LANGUAGE: English

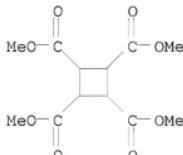
AB Diphenylisobenzofuran has been found to be an excellent trapping agent for benzocyclobutadiene and for halogenated benzocyclobutadienes. Some chemical transformations of the adducts obtained are reported.

IT 14495-41-1

(Derived from data in the 7th Collective Formula Index (1962-1966))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 56 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1962:403716 CAPLUS

DOCUMENT NUMBER: 57:3716

ORIGINAL REFERENCE NO.: 57:671i, 672a-e

TITLE: The chemistry of photodimers of maleic and fumaric acids derivatives. III.

cis,trans,cis-1,2,3,4-Tetracyanocyclobutane; possible precursors for tetramethyleneecyclobutane

AUTHOR(S): Griffin, G. W.; Basinski, J. E.; Peterson, L. I.

CORPORATE SOURCE: Yale Univ.

SOURCE: Journal of the American Chemical Society (1962), 84, 1012-15
CODEN: JACSAT; ISSN: 0002-7863

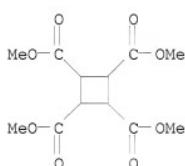
DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

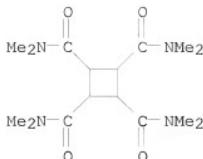
OTHER SOURCE(S): CASREACT 57:3716

GI For diagram(s), see printed CA Issue.

AB The photodimerization of fumaronitrile (I) to
 cis-trans,cis-tetracyanocyclobutane (II) in the solid state has been
 studied and the stereochem. of II correlated with the crystal lattice
 structure of I. The chemical of II has been investigated and a series of
 compds. derived from I have been synthesized. I deposited on the inside
 of a 1-l. graduated cylinder by evaporating a solution of I under N₂, the
 deposit
 irradiated 1 wk with a germicidal lamp and extracted with hot Et₂O left 2.1 g.
 II, p. 250° (decomposition) (MeCN). II (0.75 g.) added to 20 cc. AcOH
 and 1 cc. concentrated HCl, heated to solution, concentrated, and filtered
 yielded 0.393
 g. III, m. 325° (Me₂CO); the filtrate treated with CH₂N₂-Et₂O gave
 the tetra-CO₂Me analog of II, m. 144-5°. II (8.0 g.), 150 cc.
 Ac₂O, and 0.70 g. PtO₂ hydrogenated 1 wk at about 25° yielded 4.0
 g. tetra-AcNHCH₂ analog (IV) of II, m. 278-9° (H₂O). IV (6.0 g.)
 and 35 cc. concentrated HCl heated 3 h. and evaporated, and the residue
 sublimed at
 80°/0.5 mm. gave the extremely hygroscopic tetra-H₂NCH₂ analog (V)
 of II. V in 10% aqueous NaOH with BzCl yielded the tetra-BzNHCH₂ analog of
 II, m. 302-3° (hot EtOH). Tetraacid chloride (VI) of
 1,2,3,4-cyclobutanecarboxylic acid, m. 76-7° (hexane), from the
 acid with PCl₅ in 200 cc. C₆H₆ treated 4 h. with stirring with gaseous
 Me₂NH, heated to boiling, filtered, and evaporated gave 5.1 g. tetra-CONMe₂
 analog (VII) of II, m. 194-5° (Et₂O-C₆H₆). VII (5.1 g.) in 100 cc.
 Et₂O and 100 cc. C₆H₆ refluxed through a Soxhlet thimble charged with 1.7
 g. LiAlH₄, refluxed 1 h., and worked up gave 3.1 g. Me₂NCH₂ analog (VIII)
 of II, b.p. 110-12°. MeI (4.0 g.) and 1.0 g. VIII in 50 cc. absolute
 MeOH refluxed overnight and cooled yielded 2.4 g. tetramethiodide of VIII.
 VIII (4.0 g.) added with stirring and cooling to 60% H₂O₂, warmed after 6
 h. to room temperature, kept overnight, heated with a small amount of Pt-C,
 filtered, and treated with picric acid gave the picrate of the
 tetra-N-oxide of VIII, m. 219-20°. VI (3 g.) in 150 cc. C₆H₆
 treated with gaseous NH₃ gave some III.
 IT 14495-41-1 94253-09-5
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA
 INDEX NAME)

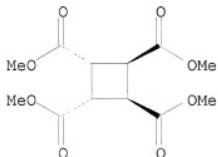


RN 94253-09-5 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxamide, N1,N1,N2,N2,N3,N3,N4,N4-octamethyl-
 (CA INDEX NAME)



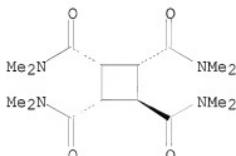
IT 1032-95-7P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester, cis,trans,cis- 905821-43-4P,
 1,2,3,4-Cyclobutanetetracarboxamide,
 N,N,N',N'',N''',N''',N'''-octamethyl-, cis,trans,cis-
 RL: PREP (Preparation)
 (preparation of)
 RN 1032-95-7 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
 (1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



RN 905821-43-4 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxamide, N1,N1,N2,N2,N3,N3,N4,N4-octamethyl-,
 (1 α ,2 α ,3 α ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 57 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1962:403715 CAPLUS
 DOCUMENT NUMBER: 57:3715
 ORIGINAL REFERENCE NO.: 57:670i,671a-i
 TITLE: The chemistry of photodimers of maleic and fumaric acids derivatives. II. The preparation of
 cis-trans,cis-and
 trans,trans,trans-1,2,3,4-tetrabenzoylcyclobutane; the
 acid chlorides of 1,2,3,4-tetracarboxycyclobutanes
 Griffin, G. W.; Hager, R. B.; Veber, D. F.
 AUTHOR(S):
 CORPORATE SOURCE: Yale Univ.

SOURCE: Journal of the American Chemical Society (1962), 84, 1008-11
DOCUMENT TYPE: CODEN: JACSAT; ISSN: 0002-7863
LANGUAGE: Journal
AB cf. CA 55, 22159f. The acid chlorides of *cis,trans,cis-* (I) and *trans,trans,trans-1,2,3,4-tetracarboxycyclobutane* (II) were prepared and employed as precursors for several sym. 1,2,3,4-tetrasubstituted cyclobutane derivs. Dry I from 22 g. tetra-Me ester (III) of I refluxed 3 h. with 63.2 g. PC15 and evaporated, the residue dissolved in 50 cc. dry C6H6, added dropwise with stirring to 40.4 g. AlCl3 in 300 cc. C6H6, stirred 2.5 h., poured into 500 cc. 10% HCl, stirred 1 h., and filtered, and the residue extracted 36 h. in a Soxhlet apparatus with 200 cc. CHCl3 gave 7.5 g. *cis,trans,cis-1,2,3,4-tetrabenzoylcyclobutane* (IV), m. 259-61°. I (22.1 g.) and 79.2 g. PC15 refluxed 3 h. and distilled gave 17.5 g. tetraacid chloride (V) of I, m. 76-7° (reptd. from warm CC14 with hexane). V with MeOH gave III. II (20 g.) and 72.5 g. PC15 refluxed 5 h. gave 21.6 g. tetraacid chloride (VI) of II, b0.2 120-4°, m. 63-5°. VI with MeOH yielded 100% tetra-Me ester of II, m. 126-7°. VI (8.5 g.) in 120 cc. dry C6H6 added during 15 min. to 15.8 g. AlCl3 in 30 cc. C6H6 at 5°, stirred 6 h. with warming to 20°, and worked up, and the crude product extracted 24 h. with C6H6 in a Soxhlet apparatus gave 10 g. IV *trans,trans,trans-isomer* (VII), m. 254-6° (PhMe). V (0.5 g.) and 1 g. NaOMe in 60 cc. CHCl3 refluxed 15 min., diluted with H2O, and filtered, and the residue extracted with C6H6 in a Soxhlet apparatus gave 0.20 g.
(1.0 g.) VII. IV heated 2.5 h. with 10% concentrated HCl in AcOH gave 13% VII. VII g.) in 40 cc. dry THF added during 15 min. to PhMgBr from 2.7 g. PhBr and 0.48 g. Mg in 25 cc. dry THF, refluxed 1.5 h., and worked up, and the crude product extracted in a Soxhlet apparatus 0.5 h. with pentane, 0.5 h. with C6H6, and 12 h. with THF gave from the THF extract 0.25 g. *trans,trans,trans-tetrakis(diphenylhydroxymethyl)cyclobutane*, m. above 330°. VII (1.0 g.) extracted from a Soxhlet thimble into 0.15 g. LiAlH4 in THF during 8 h. gave 0.98 g. *trans,trans,trans-tetrakis(α-hydroxybenzyl)cyclobutane* (VIII), m. 256-8° (50% EtOH). VIII (1.0 g.), 1.0 g. Cu chromite, and 100 cc. EtOH hydrogenated 8 h. at 250/2000 lb. initial pressure yielded 0.5 g. *trans,trans,trans-tetrabenzylcyclobutane* (IX), m. 123-4°, also obtained in the same manner directly from VII. IV (0.67 g.) and 15 cc. N2H4·H2O heated 15 h. on the steam bath and filtered and the residue sublimed at 200°/0.15 mm. gave 0.15 g. 3,6-diphenylpyridazine, m. 221-2.5° (Me2CO). CF3CO3H from 3.8 cc. (CF3CO)2O and 0.040 cc. 90% H2O2 in 6 cc. CH2Cl2 added during 15 min. with stirring to 3.6 g. NaH2PO4 and 1.0 g. VII in 60 cc. CH2Cl2, refluxed 20 h., and poured into 300 cc. H2O, the organic layer worked up, the residue digested with C6H6 left 0.16 g. unchanged VII; the extract yielded 0.095 g. *trans,trans,trans-tetracarboxyphenoxy cyclobutane*, m. 189-93° (C6H6). VI (30 g.) in 100 cc. Et2O added dropwise during 15 min. with stirring and cooling to 1.2 mol CH2N2 in 2 l. Et2O, stirred 1 h. at room temperature, and concentrated gave 30.2 g. diazo ketone; a 30.0-g. sample in 1 l. MeOH stirred 4 h. at 61° with 3.5 g. Ag2O and worked up, the crude product digested with 150 cc. boiling Et2O, and the extract distilled yielded 9.8 g. tetra-Me ester (X) of *trans,trans,trans-1,2,3,4-cyclobutanetetraacetic acid* (XI), m. 59-61° (CC14). X heated 0.5 h. at 60° in 20% H2SO4 and cooled gave 92% XI, needles, m. 310-12°. IX (1.0 g.) in 50 cc. 90% aqueous AcOH treated 8 h. at room temperature with 1.3 g. O3/h., kept 2 days at room temperature in 10 cc. 30% H2O2 in 26 cc. H2O, filtered, concentrated to 5 cc., and kept overnight yielded 0.12 g. XI. VI (9.0 g.) in 125 cc. C6H6 treated with 7.6 g. activated NaN3, refluxed overnight, filtered hot,

treated with 100 cc. concentrated HCl, refluxed 0.5 h. with stirring, and the aqueous layer concentrated to 25 cc. and filtered yielded 3.0 g. trans,trans,trans-1,2,3,4-tetraminocyclobutane-4HCl (XII.4HCl). XII.4HCl (0.050 g.) triturated with NaOH and heated at 100°/0.1 mm. gave an extremely hygroscopic sublimate which benzoylated by the Schotten-Baumann procedure yielded the tetrakis(N-Bz derivative) of XII, m. 308-10° (EtOH). Mg (1.05 g.) in 35 cc. dry THF treated with 3.24 g. iodine, the suspension treated with 50 cc. dry THF and 1.0 g. VII during 24 h. (added by extraction from a Soxhlet thimble) under N, hydrolyzed with 50 cc. H2O, kept 1 h., evaporated, acidified with dilute HCl, and extracted with C6H6 gave 0.03 g.

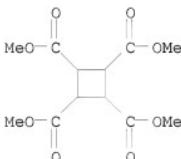
g.
(BzCH2)2, m. 143-4.5° (EtOH).

IT 14495-41-1 94253-09-5

(Derived from data in the 7th Collective Formula Index (1962-1966))

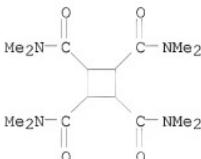
RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



RN 94253-09-5 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxamide, N1,N1,N2,N2,N3,N3,N4,N4-octamethyl- (CA INDEX NAME)



L5 ANSWER 58 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1962:53033 CAPLUS

DOCUMENT NUMBER: 56:53033

ORIGINAL REFERENCE NO.: 56:9993i,9994a-i,9995a-b

TITLE: Organic sulfur compounds. IV. Some addition and cooxidation reactions of 4-chlorobenzenethiol with dicyclopentadiene and Aldrin

AUTHOR(S): Oswald, Alexis A.; Noel, Fernand

CORPORATE SOURCE: Imp. Oil Ltd., Sarnia, Can.

SOURCE: Journal of Organic Chemistry (1961), 26, 3948-57

CODEN: JOCEAH; ISSN: 0022-3263

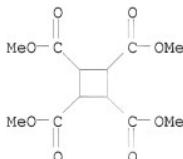
DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

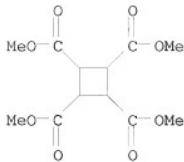
AB cf. CA 54, 21005e.-4-Chlorobenzenethiol (I) readily added to exo- (II) and endo-dicyclopentadienes (III) and Aldrin (IV) by a radical mechanism to yield the exo (V) and endo isomers of

4-chlorophenylthiodihydro-dicyclopentadiene (VI) and 2-(p-chlorophenylthio)-endo-5,6,7,8,9,9-hexachloro-exo-endo-1,2,3,4,4a,5,8,8a-octahydro-1,4,5,8-dimethanaphthalene (VII). When I solns. were air oxidized with any of the above diolefins, unstable hydroperoxide intermediates, p-chlorophenylthiohydroperoxydihydro-endo-dicyclopentadiene (VIII), p-chlorophenylthiohydroperoxydihydro-exo-dicyclopentadiene (IX), and exo-2-(p-chlorophenylthio)-3-hydroperoxy-endo-5,6,7,8,9,9-hexachloro-exo-endo-1,2,3,4,4a,5,8,8a-octahydro-1,4:5,8-dimethanaphthalene (X) were obtained. The hydroperoxide intermediate of the thiol-IX cooxidn., X, was isolated as a colorless crystalline substance. In solution, it rearranged to the corresponding 2-(p-chlorophenylsulfinyl)-3-hydroxy derivative (XI). It was suggested that similar cooxidn. and not addition reactions of thiols and dicyclopentadiene were responsible for gum formation in some cracked gasolines. I was recrystd., m. 52-3° (heptane). Tech. IV was recrystd. from heptane then MeOH, m. 101-2°. III (13.2 g.) and 14.5 g. I mixed with rise in temperature, the temperature maintained below 70° by cooling, left 4 days at room temperature, and the mixture distilled gave 26.2 g. VI, b2 145-6°. III (13.2 g.) and 14.5 g. I each in 0.3 mole/l. concentration in heptane left 1 week under N, evaporated, and the residue distilled gave 25.5 g. VI. About 0.09 g. tert-butyl hydroperoxide added to the heptane solution described above and left 1 week gave 93% VI. III (13.2 g.) and 29 g. I in heptane left 1 week gave 85% VI. Pure VI had n20D 1.6073. III (56 g.) and 224.5 g. aqueous HI stirred 12 hrs. under N with the temperature maintained below 50°, dissolved in Et2O, washed, and distilled gave 116 g. iododihydro-exo-dicyclopentadiene (XII), b2 80-1°. XII (129.5 g.) and 67.2 g. KOH in 250 ml. 95% aqueous alc. refluxed 4 hrs. under N gave 40 g. II, b8 49-50°, n20D 1.5105. I (14.5 g.) and 13.2 g. II similarly treated gave 96% V, b2 146-7°, n20D 1.6053. VI 13.8 g.) in 40 ml. Ac2O and 15 ml. AcOH treated in 20 min. at about 50° with 11.2 g. 30% H2O2, left 24 hrs. at room temperature, diluted with H2O, concentrated, and the product crystallized gave 8.5 g. 4-chlorophenylsulfonyldihydro-endo-dicyclopentadiene (XIII), m. 113-14.5°. In another experiment, 14.5 g. I and 14.5 g. III gave the adduct and the crude adduct in 200 ml. AcOH oxidized by slowly adding 22.4 g. H2O2 at 40° gave 27.8 g. XIII. Similarly V gave 57% 4-chlorophenylsulfonyldihydro-exo-dicyclopentadiene (XIV), m. 84-85°. In another experiment, the oxidation of 27.7 g. V carried out in 200 ml. AcOH with 22.4 g. H2O2 gave 70% XIV. Heptane solns. of 2.9 g. I and 7.3 g. IV were mixed under N and left 1 week at room temperature away from air to give 7.5 g. VII, m. 106.5-8.5°. A heptane solution (66 ml.) of the reagents prepared as above was irradiated in a quartz flask by an ultraviolet lamp 1 hr. and the product crystallized to give 8.5 g. VII. VII (5.1 g.) in 40 ml. 1:1 AcOH-Ac2O treated at 40° with 0.34 g. H2O2 in an aqueous 30% solution, the mixture kept 2 hrs. at that temperature, left overnight at room temperature, concentrated, and the product crystallized gave two isomeric sulfoxides, m. 206-8.5° and 190-3°, in 36% and 30% yields. VII (5.1 g.) oxidized with 0.68 g. H2O2 as 30% solution gave 4.5 g. exo-2-(p-chlorophenylsulfonyl)-endo-5,6,7,8,9,9-hexachloro-exo-endo-1,2,3,4,4a,5,8,8a-octahydro-1,4:5,8-dimethanaphthalene, m. 223-6°. I (14.5 g.) in 320 ml. heptane treated with passage of air, 13.2 g. III added, the air introduction continued 2 hrs. at room temperature, and the product crystallized gave two hydroxyethylsulfoxide isomers, m. 218-20° and 182-4°. The heptane filtrate on evaporation left 7 g. oil, which on vacuum distillation afforded 5 g. VI; oxidation gave p-chlorophenylsulfonyldihydro-endo-dicyclopentadiene. O introduced at -5° into a 160 ml. heptane solution of 3.6 g. I and 3.3 g. III, after 1 hr. of oxygenation under ultraviolet light the liquor decanted, and cooled gave VIII, as crystals which became an oil at room temperature, n20D

1.5820. From the heptane filtrate I g. crystalline solid was obtained, browned at 140°, m. 175-85°. The above peroxidic products were combined and recrystd. to yield 4.4 g.
 p-chlorophenylsulfinylhydroxydihydro-endo-dicyclopentadiene isomers described above. A 100 ml. heptane solution containing 4.8 g. I and 4.3 g. II aerated 2 hrs. and left overnight gave 4.1 g. semisolid. This was taken up in Me₂CO, filtered, and the solid recrystd. to give 1.1 g.
 p-chlorophenylsulfinylhydroxydihydro-exo-dicyclopentadiene, m. 167-8°. A 160 ml. heptane solution of 3.6 g. I and 3.3 g. II oxygenated at -5° under ultraviolet irradiation gave IX, unstable liquid, n_D²⁰ D 1.5850. Into 333 ml. heptane solution containing 7.23 g. I and 18.25 g. IV air was introduced 3 hrs. at room temperature to give 9.7 g. X, m. 248-9° (decomposition). Another crystalline hydroxy sulfoxide isomer (XV) was obtained from the PhMe filtrate, m. 207-10°. Also obtained from the mother liquor was 0.5 g. VII. Into a 162 ml. pentane solution of 3.62 g. I and 9.12 g. IV air was introduced with irradiation with an ultraviolet lamp to give after a total of 0.5 hr. 2 g. XI. On heating XI m. 116-19°, solidified, m. 240-2°. Further introduction of air into the filtered mixture resulted in precipitation of a XI, X, and XV mixture A
 CC₁₄ solution (15 ml.) of 0.27 g. XI left at room temperature gave 0.18 g. X.
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 59 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1962:53032 CAPLUS
 DOCUMENT NUMBER: 56:53032
 ORIGINAL REFERENCE NO.: 56:99931
 TITLE: Structure of Nenitzescu's dimer of benzocyclobutadiene
 AUTHOR(S): Griffin, G. W.; Veber, D. F.
 CORPORATE SOURCE: Yale Univ.
 SOURCE: Chemistry & Industry (London, United Kingdom) (1961)
 1162
 CODEN: CHINAG; ISSN: 0009-3068
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 AB cf. CA 54, 24612a.-Nenitzescu's hydrocarbon (I), dibenzotricyclo[4.2.0.02,5]octa-3,7-diene, was ozonized. The product, after esterification with diazomethane, was cis-trans-cis-1,2,3,4-tetracarboxymethoxycyclobutane, yield 28%, m. 142-4° (MeOH). The two aromatic nuclei in I were trans.
 IT 14495-41-1
 (Derived from data in the 7th Collective Formula Index (1962-1966))
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



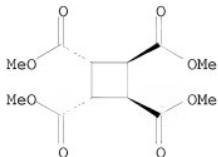
IT 1032-95-7P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
(Structure of Nenitzescu's dimer of benzocyclobutadiene)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 60 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1961:137115 CAPLUS

DOCUMENT NUMBER: 55:137115

ORIGINAL REFERENCE NO.: 55:25787b-c

TITLE: Note on the all-cis-cyclobutane-1,2,3,4-tetracarboxylic acid

AUTHOR(S): Criegee, H.; Funke, Wolfgang

CORPORATE SOURCE: Tech. Hochschule, Karlsruhe, Germany

SOURCE: Chemische Berichte (1961), 94, 2358-9

CODEN: CBEBAM; ISSN: 0009-2940

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

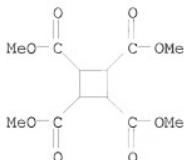
AB Powdered peri-truxilic acid anhydride (1.0 g.) in 130 cc. AcOH treated 18 hrs. at room temperature with 1.65 g. ozone/hr. and then with 10 cc. 30% H2O2, the mixture kept 24 hrs., heated slowly to 80°, cooled, evaporated in vacuo at 35°, the residue dissolved in a min. of hot AcOH, and the solution diluted after cooling dropwise with petr. ether yielded 50% all-cis-cyclobutane-1,2,3,4-tetracarboxylic acid, platelets, decomposed from 200°; it gave with CH2N2 in tetrahydrofuran the tetra-Me ester, needles, m. 203-4° (after softening at 185°) (EtOAc and sublimed at 140°/0.01 mm.). The acid heated 1 hr. with Ac2O at 100° gave the dianhydride, darkened above 235° without melting, rhombs from Ac2O-dioxane.

IT 14495-41-1P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetra-Me ester

RL: PREP (Preparation)
(preparation of)

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 61 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1961:118138 CAPLUS

DOCUMENT NUMBER: 55:118138

ORIGINAL REFERENCE NO.: 55:22159f-i,22160a-c

TITLE: The chemistry of photodimers of maleic and fumaric acid derivatives. I. Dimethyl fumarate dimer

AUTHOR(S): Griffin, G. W.; Velluro, A. F.; Furukawa, K.

CORPORATE SOURCE: Yale Univ.

SOURCE: Journal of the American Chemical Society (1961), 83, 2725-8

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 55:118138

AB The irradiation of di-Me fumarate (I) in the solid state gave cis,trans,cis-1,2,3,4-tetracarbomethoxycyclobutane (II), whose stereochemistry can be rationalized in terms of direct bond formation between nearest neighbor mols. in the crystal lattice of the monomer. The isomerization of II to the thermodynamically more stable trans,trans,trans-isomer (III) of II was readily achieved thermally. The reduction of III and the hydrolysis of II and III as well as their reactions with PhMgBr were also studied. I (10 g.) in Me₂CO evaporated under N in a glass cylinder rotating in nearly horizontal position, an ultraviolet lamp inserted into the cylinder, the I irradiated 1-5 days at 25-30°, and the product extracted with C₆H₆ gave 60% II, m. 144-5°. II transesterified with PhCH₂OH gave the tetra-PhCH₂ ester, m. 107.5-8.5° (C₆H₆-hexane). II (1.0 g.) heated in a Pyrex tube at 0.1 mm. 20 hrs. at 300° gave 50% III, m. 123-5°. II (0.28 g.) refluxed 2 hrs. with 0.3 g. NaOMe in MeOH, diluted with 10 cc. 10% aqueous NH₄Cl, evaporated, and sublimed at 80°/0.01 mm. gave 18% III, m. 127° (H₂O). II (5 g.) heated with concentrated HCl to solution on a steam bath, and the resulting acid, which lost H₂O at 220-5°, treated with CH₂N₂-Et₂O gave II. III (0.28 g.) and 5 cc. concentrated HCl gave the tetra-CO₂H analog of III, m. 261-4° (decomposition) [AcOH-hexane or tetrahydrofuran (THF)-hexane], which sublimed gave the chair dianhydride (IV). Tetra-CO₂H analog (V) of II (0.10 g.) heated 3 hrs. with SOC₁₂ and evaporated, and the residue washed with hexane and sublimed, gave IV. V heated at 225-30°/0.05 mm. gave also IV. IV was identical with the photodimerization product from maleic anhydride. IV (0.50 g.), 2.50 g. PbO₂, and 10 g. powdered glass heated 0.25 hr. at 250° with stirring under a stream of N (CO₂ was evolved) gave a residue containing no organic material. II (5.8 g.) in 150 cc. C₆H₆ and 150 cc. dry Et₂O reduced with 3.0 g. LiAlH₄ in the inverse manner and then treated dropwise with 25 cc. AcCl in 50 cc. Et₂O and heated 12 hrs. gave 2.0 g. tetraacetate (VI) of cis,trans,cis-1,2,3,4-tetrakis(hydroxymethyl)cyclobutane (VII), b₀.02 178-80°. VI (0.90 g.) and 2.0 g. KOH in 50 cc. MeOH refluxed 2 hrs. and evaporated, and the residue heated 3 hrs. with excess BzCl gave the tetrabenzooate of VII, m. 104-5°. V (1.0 g.) in 200 cc. boiling THF treated dropwise with 0.1 mole PhMgBr in 50 cc. dry THF gave 0.5 g. crystalline

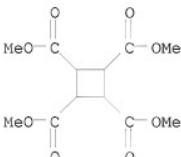
solid, m. 285-7° (decomposition) (C₆H₆); the infrared spectrum showed bands for a OH and a CO function. IV treated in 250 cc. THF dropwise with stirring with PhMgBr from 16 g. Mg, 72 cc. PhBr, and 75 cc. THF, the mixture refluxed 2 hrs., stirred 12 hrs. at room temperature, and worked up gave trans,trans,trans-1,2,3,4-tetrakis(α -hydroxybenzhydryl)cyclobutane (VIII), m. above 300° (absolute EtOH). VIII (0.50 g.), 1.0 g. CuO-Cu-Ba-chromite catalyst, and 100 cc. EtOH hydrogenolyzed 8 hrs. at 250° and 1900 lb. initial H pressure yielded 0.25 g. trans,trans,trans-1,2,3,4-tetrabenzydrylcyclobutane, m. 284-7° (methylcyclohexane).

IT 14495-41-1

(Derived from data in the 6th Collective Formula Index (1957-1961))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



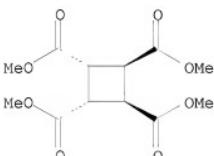
IT 1032-95-7P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
(The chemistry of photodimers of maleic and fumaric acid derivatives.
I. Dimethyl fumarate dimer)

RN 1032-95-7 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1 α ,2 α ,3 β ,4 β)- (CA INDEX NAME)

Relative stereochemistry.



L5 ANSWER 62 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1961:118137 CAPLUS

DOCUMENT NUMBER: 55:118137

ORIGINAL REFERENCE NO.: 55:22158e-i,22159a-f

TITLE: Dimethylketene dimer. I. Catalytic hydrogenation and ring cleavage by alcohols

AUTHOR(S): Hasek, Robert H.; Elam, Edward U.; Martin, James C.; Nations, Ronald G.

CORPORATE SOURCE: Tennessee Eastman Co., Kingsport

SOURCE: Journal of Organic Chemistry (1961), 26, 700-4

CODEN: JOCEAH; ISSN: 0022-3263

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 55:118137

GI For diagram(s), see printed CA Issue.

AB Optimal conditions for hydrogenation of dimethylketene dimer (I) to the corresponding glycol (II) were sought and excellent yields obtained with a Ru-C catalyst. I (400 g.) in 600 ml. MeOH hydrogenated at 125°/1000-1500 lb./sq. in 1 hr. with 20 g. 5% Ru-C with rocking in a stainless steel autoclave and the filtered solution evaporated yielded 98%

II,

2,2,4,4-tetramethyl-1,3-cyclobutanediol, m. 129-50°. I (285 g.) in 400 ml. MeOH hydrogenated 18 hrs. at 150°/100 atmospheric with 20 g. Raney Ni, the filtered solution hydrogenated 5 hrs. with 50 g. Raney Ni under the same conditions, the filtered solution evaporated, the residue distilled in vacuo,

the product (91 g., b2 50-80°) combined with material (140 g., b3 62-72°) from a similar run, and the mixture fractionated through an 8 ft. spinning band column (10:1 reflux ratio) gave 26 ml. Me2CHCOCMe2CO2R (III, R = Me) (IV), b3.1-3.4 51.0-1.8°, contaminated with a small amount of Me2CHCOCMe2CH2OH (V), and 25 ml. V, b3.5-3.6 62.6°, n20 D 1.4382, λ 2.9, 5.9, 7.3-7.4 μ; p-O2NC6H4CO derivative m. 83-4°. I (28 g.) in 300 ml. MeOH hydrogenated with 0.2 mole H with stirring at 40°/3 atmospheric with 4 g. Raney Ni in EtOH, the filtered solution evaporated, and the residue recrystd. from C6H6 yielded 70% 3-hydroxy-2,2,4,4-tetramethylcyclobutanone, m. 114°; 2,4-dinitrophenylhydrazone m. 154.5-6.0° (corrected). I (100 g.) and 100 g. MeOH autoclaved (N atmospheric) 12 hrs. at 160° and the filtered solution distilled yielded 32% IV, converted by N2H4 to 4,4-dimethyl-3-isopropyl-2-pyrazolin-5-one, m. 81.5-2.5° (corrected). Na (0.1 g.) in 100 ml. absolute alc. at 10° treated portionwise (external cooling) below 50° with 50 g. I, the mixture acidified with 2 ml. AcOH, and distilled yielded 8% III (R = Et). Me3COH (250 ml.) containing

4 g. 50% dispersion of NaH in mineral oil stirred with 140 g. I, the mixture heated slowly to 60° to initiate an exothermic reaction, the self-refluxing solution stirred 1 hr., acidified with 10 ml. AcOH, and distilled

yielded 73% III (R = Me3C). I (70 g.), 15 g. HOCH2CH2OH, and 15 ml. C5H5N autoclaved 12 hrs. at 200° and the homogeneous product distilled gave 20 g. forerun and 77% III (R = CH2CH2) (bis compound). I (100 g.), 50 g. II, and 0.5 g. Na heated to 100°, the slurry treated with 2 ml. absolute alc. with immediate rise of temperature to 140-5°, the temperature maintained 45 min. before cooling, and the product repeatedly recrystd. from Me2CO yielded 5% III (R = HC.CMe2.CH.CMe2) (his compound), m. 113-14°. The base-catalyzed alcoholysis of I was used to prepare a series of esters. Further study showed that phenols and mercaptans were similarly esterified, although at a somewhat slower rate. I (80 g.), 53 g. PhOH, and 0.1 g. Na heated to 90°, 2 ml. absolute alc. added, heating continued to 190-5°, the mixture kept at this temperature 30 min., and the cooled mixture distilled yielded 86% III (R = Ph). I (70 g.) and 101 g. C12H25SH refluxed 3 hrs. with stirring with 0.5 g. Na in 300 ml. xylene, the low-boiling components removed at 215°/3 mm., and the residue distilled in a cyclic falling film mol. still at 78-88°/0.02 mm. gave 72% Me2CHCOCMe2CO2R (VI, R = C12H25). Data for III and VI were tabulated [R, % yield, b.p./mm. or m.p. (solvent), and n20D given]. III: Me, 32, 88-91°/22, 1.4244; Et, 87, 81.5-82°/9.5, 1.4230; Me2CH, 54, 113-16°/36, 1.4209; H2C:CHCH2, 73, 95-6°/10, 1.4369; Bu, 18, 113-14°/14, 1.4288; Me3C, 73, 100-4°/16, 1.4212; Ph, 86, 95-6°/0.5, 1.4859; CH2CH2 (diester), 77, 185-7°/5.5, 1.4484; HOCH2CMe2CH2, 56, 130-9°/2.5-3.5, 1.4488; CH2CMe2CH2 (diester), 5, 184°/3.5, 1.4488; S(CH2CH2)2 (diester), 93.5, 110°/0.004, 1.4720; MeCH2C(CH2)3 (triester), 52, 140°/0.001, 1.4587; C(CH2)4 (tetraester), 57, 91-2° (Me2CO-C6H14; p-C6H4 (diester), 11, 106-7° (alc.), VI: C12H25, 72, 78-88°/0.02, 1.4705; (CH2)6 (diester), 76, 108-33°/1.0,

1.4951; p-Me₃CC₆H₄, 60, 58-9° (alc.). II (321 g.) and 276 g. HCO₂H refluxed 5 hrs. in 200 ml. C₆H₆, the cooled solution refluxed 4 hrs. with 276 g. HCO₂H, the cooled solution diluted with C₆H₆, the washed and dried solution evaporated, and the residue distilled through a 48 in. packed column yielded

315

g. 98%-pure 2,2,4,4-tetramethyl-1,3-cyclobutanediol diformate (VII), b53 132-3°. VII (315 g.) stored at 20° and filtered gave 167 g. solid, m. 58-65°, recrystd. from petr. ether to give 144 g. trans-II diformate (VIII), m. 67-8°. VIII (132 g.) in 900 ml. MeOH containing 2 g. Na kept 24 hrs. at 20°, treated with 9 ml. AcOH, evaporated on a steam bath, the residue taken up in 900 ml. boiling PhMe, the filtered solution concentrated to 450 ml., and the cooled mixture filtered gave 78 g.

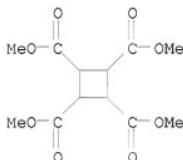
oven-dried (108°) trans-II, m. 148°. The filtrate from VIII converted to the free glycol by methanolysis, the mixture of glycol isomers crystallized from PhMe to give 79 g. material, m. 130-54°, a sample (57 g.) refluxed in 400 ml. PhMe, the solution cooled to 80°, the supernatant liquid decanted, the crystalline residue taken up in 400 ml. boiling PhMe, cooled to 100°, the supernatant decanted, and the crystalline product (24 g., m. 160-3°) recrystd. from 350 ml. PhMe yielded 22 g. pure cis-II, m. 162.5-3.5°. The configuration of the glycol isomers was assigned on the basis of nuclear magnetic resonance spectra since cis-II contains 2 types of Me groups, whereas all Me groups in trans-II are equivalent. The dipole moments 2.39 and 2.10 D. for the cis and trans isomers were consistent with the previously described structural assignments.

IT 14495-41-1

(Derived from data in the 6th Collective Formula Index (1957-1961))

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 63 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1961:59429 CAPLUS
DOCUMENT NUMBER: 55:59429
ORIGINAL REFERENCE NO.: 55:11380b-d
TITLE: cis,cis,cis-1,2,3,4-Tetracarbomethoxycyclobutane;
structure of β-heptacylene
AUTHOR(S): Griffin, Gary W.; Veber, Daniel F.
CORPORATE SOURCE: Yale Univ.
SOURCE: Journal of the American Chemical Society (1960), 82,
6417
DOCUMENT TYPE: JACSAT; ISSN: 0002-7863
LANGUAGE: Journal
GI For diagram(s), see printed CA Issue.
AB cf. CA 54, 13019d. β-Heptacylene I (cis, Ia) in 90% aqueous HOAc
ozonized 17 hrs. at 25° with 3.66 g. O₃/hr., the reaction mixture
kept 3 days with 30% H₂O₂ at room temperature, the solvents evaporated, the
residue

esterified with CH₂N₂ and recrystd. from xylene gave a 5.6% yield of cis,cis,cis-1,2,3,4-tetracarbomethoxycyclobutane (II), m. 203-5°, λ 3.34, 3.38, 5.72, 6.95, 8.34, 8.47, 9.31, 10.45, 12.00, 12.84 μ. Similarly α-heptacycene I (trans, III) gave cis,trans,cis-1,2,3,4-tetracarbomethoxycyclobutane (IV). Both II and IV in a sealed tube 20 hrs. at 300° could be isomerized to the all-trans tetraester. The infrared spectrum of II was identical to a totally esterified but otherwise uncharacterized minor product obtained from the irradiation of maleic anhydride in cyclohexane by Criegee. II was the last of the 4 possible tetracarbomethoxycyclobutanes to be synthesized.

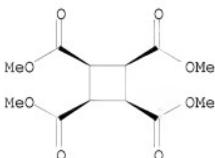
IT 31351-41-4P

RL: SPN (Synthetic preparation); PRP (Properties); PREP (Preparation)
(cis,cis,cis-1,2,3,4-Tetracarbomethoxycyclobutane; structure of
β-heptacycene)

RN 31351-41-4 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester,
(1a,2a,3a,4a)- (9CI) (CA INDEX NAME)

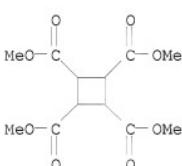
Relative stereochemistry.



IT 14495-41-1, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester
(stereoisomers)

RN 14495-41-1 CAPLUS

CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 64 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1961:59428 CAPLUS

DOCUMENT NUMBER: 55:59428

ORIGINAL REFERENCE NO.: 55:11379h-i,11380a-b

TITLE: The pyrolysis of fluorene

AUTHOR(S): Lang, Karl Friedrich; Buffeleb, Herbert; Kalowy, Joseph

CORPORATE SOURCE: Rutgerswerke Akt.-Ges., Castrop-Rauxel, Germany

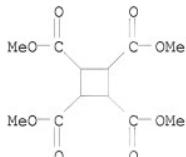
SOURCE: Chemische Berichte (1961), 94, 523-6

CODEN: CHBEAM; ISSN: 0009-2940

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

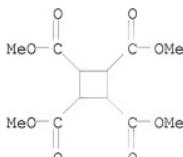
GI For diagram(s), see printed CA Issue.
 AB The pyrolysis of fluorene (I) yielded 1,2:7,8-dibenzochrysene (III), a new hydrocarbon probably of the structure III, and rubicene (IV). I (4250 g.) pyrolyzed at 700-50° gave 3355 g. pyrolyzate which distilled gave unreacted I and left 645 g. black-brown residue; the residue dissolved in dry xylene and chromatographed on Al2O3 gave 128 g. II, needles, m. 214-15°, 48 g. III, needles, m. 288-9°, and 26 g. IV, red needles, m. 304-5° (xylene); in one run a small amount of a hydrocarbon, pale yellow needles, m. 437-45°, was also obtained; it was green in warm concentrated H₂SO₄. The ultraviolet absorption spectra of II, III, and IV were recorded.
 IT 14495-41-1, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester
 (stereoisomers)
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 65 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1961:22472 CAPLUS
 DOCUMENT NUMBER: 55:22472
 ORIGINAL REFERENCE NO.: 55:4382c-i
 TITLE: Cyclobutane-1,2,3,4-tetracarboxylic acid
 AUTHOR(S): Criegee, Rudolf; Hover, Hermann
 CORPORATE SOURCE: Tech. Hochschule, Karlsruhe, Germany
 SOURCE: Chemische Berichte (1960), 93, 2521-4
 CODEN: CHBEAM; ISSN: 0009-2940
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 OTHER SOURCE(S): CASREACT 55:22472
 GI For diagram(s), see printed CA Issue.
 AB The ozone degradation of truxillic acids (I) yielded 3 of the 4 possible cyclobutane-1,2,3,4-tetracarboxylic acids (II). Powdered PhCH:CHCH:C(CO₂H)₂ (III) (100 g.) in 2 l. weakly acidic H₂O stirred and irradiated 48 hrs. with an immersed ultraviolet lamp and filtered gave nearly 100% dimer (IV) of III, m. 195° (glacial AcOH). IV (100 g.) in 650 cc. glacial AcOH and 100 cc. H₂O treated at -5 to 0° with 28-30 g. ozone (2.2-2.3 g./hr.) and then gradually with 750 cc. 10% H₂O₂ below 30° and kept 4-5 days gave 40-5 g. α-I, m. 274° (MeOH); in smaller runs the yield could be increased to about 75%. α-I (13.0 g.) in 600 cc. glacial AcOH and 100 cc. H₂O treated 20 hrs. with 2.8 g. ozone/hr. then gradually with 270 cc. 10% H₂O₂ and evaporated after 2 days in vacuo below 40° gave 9.2 g. IVa, plates, m. about 240° with previous sintering (decomposition) (dioxane); tetra-Me ester (V), 90%, m. 145° (C₆H₆), from IIa with CH₂N₂ at 0°. IIa (4.0 g.) in 20 cc. Ac₂O heated 0.5 hr. at 100-20°, cooled, and filtered yielded 2.52 g. dianhydride of IIa, turned brown above 300° without melting. γ-I (4.0 g.), m. 228° (aqueous EtOH), ozonized and treated with H₂O₂ in the usual manner yielded 80-90% IVb, m. 219°

(precipitated from glacial AcOH with Et₂O), also obtained similarly from epi-I; tetra-Me ester, rodlets, m. 73-4° (petr. ether), b0.15
 134-7°. *α*-I, m. 192°, yielded in the same manner
 80-90% Va, m. 260-4° (decomposition) (precipitated from hot glacial AcOH with ligroine); tetra-Me ester m. 127° (C₆H₆-petr. ether). V (3.0 g.) reduced at 30-40° with 2 g. LiAlH₄, the noncryst. product in C₅H₅N treated at 0° with excess p-MeC₆H₄SO₂Cl, kept 24 hrs. at room temperature, and poured into H₂O yielded 3.0 g. VI (R = OH), melted with decomposition (hot aqueous EtOH). VI (16 g.) and 14 g. NaI refluxed 4 hrs., filtered, evaporated, and the product isolated with CHCl₃ yielded 7.0 g. VI (R = I), m. 140° (EtOAc-MeOH).

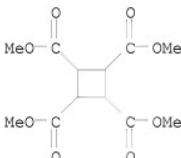
IT 14495-41-1P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester
 RL: PREP (Preparation)
 (preparation of)
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 66 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1961:22471 CAPLUS
 DOCUMENT NUMBER: 55:22471
 ORIGINAL REFERENCE NO.: 55:4381h-i,4382a-c
 TITLE: Cyclopropanes. VII. The absolute configuration of trans-caronic and cis- and trans-umbellularic acids
 AUTHOR(S): Walborsky, H. M.; Sugita, T.; Ohno, M.; Inouye, Y.
 CORPORATE SOURCE: Florida State Univ., Tallahassee
 SOURCE: Journal of the American Chemical Society (1960), 82,
 5255-6
 CODEN: JACSAT; ISSN: 0002-7863
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 GI For diagram(s), see printed CA Issue.
 AB cf. CA 53, 16053a; 54, 15267a. Et diazoacetate (I) (0.042 mol) was added to 0.042 mol (-)-menthyl β,β -dimethylacrylate (II) at 130-40° and the mixture distilled to remove unreacted II, which was treated once more with an equivalent amount of I to yield 65% crude adduct.
 The adduct was saponified to yield 27% caronic acid (III), $[\alpha]_{D}^{20}$ D -5.05° (EtOH). The observed optical rotation corresponded to 15.9% asym. synthesis. To a xylene solution of dimethylidiazomethane was added 31.4 g. (-)-di-menthyl fumarate in xylene at 0-5° to yield 10.0 g. oil, which was heated with 1.0 g. Cu powder at 160-70° until N evolution ceased. The product distilled to yield 56% of adduct ester. Saponification yielded 25% trans-III, $[\alpha]_{D}^{20}$ D 2.0° (EtOH), 6.3% asym. synthesis. I (5.0 g.) was added to 11.3 g. (-)-menthyl α -isopropylacrylate at 80° and maintained at that temperature until N evolution ceased. The addition product was saponified and the mixture of cis and trans acids separated to

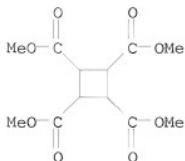
give 14.7% cis-umbellularic acid (IV), $[\alpha]_{D}^{20} -5.4^{\circ}$ (CHCl₃), 6% asym. synthesis. The trans-umbellularic acid (V) was isolated in 56.5% yield, $[\alpha]_{D}^{20} -5.2^{\circ}$ (acetone), 2.7% asym. synthesis. On the basis of the above asym. syntheses, the following absolute configurations were assigned to IV and V.

IT 14495-41-1P, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester
 RL: PREP (Preparation)
 (preparation of)
 RN 14495-41-1 CAPLUS
 CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



L5 ANSWER 67 OF 67 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1960:67951 CAPLUS
 DOCUMENT NUMBER: 54:67951
 ORIGINAL REFERENCE NO.: 54:13019d-h
 TITLE: Photodimerization of maleic and fumaric acid derivatives
 AUTHOR(S): Griffin, G. W.; Basinski, J. E.; Velluro, A. F.
 CORPORATE SOURCE: Yale Univ.
 SOURCE: Tetrahedron Letters (1960), (No. 3), 13-16
 CODEN: TELEAY; ISSN: 0040-4039
 DOCUMENT TYPE: Journal
 LANGUAGE: Unavailable
 GI For diagram(s), see printed CA Issue.
 AB trans-(MeO₂CCH₂)₂ (I), trans-(NCCH₂)₂ (II), and (OCCH₂)₂ (III) were irradiated in the solid state with formation of the corresponding cyclobutane derivs. The olefins were deposited in a thin layer on the inner surface of a glass tube by evaporation of a CHCl₃ or Et₂O solution, the layer irradiated 7-10 days by an internally located Westinghouse 15 T 8 Germicidal Sterilamp (95% ultraviolet radiation in the 253.7 m μ region), and the tube externally cooled with cold H₂O. Irradiation of 10 g. I gave 2 g. 1,2,3,4-tetracarbomethoxycyclobutane (IV), m. 144-5°, λ 5.74, 5.80, 7.72, 8.33, 9.79, 10.55, 11.85, 12.21 μ (KBr), nuclear magnetic resonance spectrum peaks at τ 6.15, 6.20 (CDCl₃) in agreement with the structure assigned by Criegee. Treatment of (IV) with NaOMe in MeOH effected stereochem. equilibration and gave the all-trans ester, m. 127°. Irradiation of II 7 days and recrystn. of the Et₂O-insol. material from MeCN gave 1,2,3,4-tetracyanocyclobutane, m. 237-9° (decomposition), λ 4.43, 3.35, 7.98, 8.25, 8.72, 9.72, 9.54, 9.64, 10.47, 12.22 μ , with the same stereo-chemistry as that of I (as shown by hydrolysis with HCl-AcOH and esterification with CH₂N₂ to give I). Irradiation of III and sublimation of the product (m. above 200°) at 93°/0.005 mm. to remove III and at 200°/0.005 mm. gave a bisanhydride of 1,2,3,4-cyclobutanetetracarboxylic acid, λ 5.40, 5.62 μ .
 IT 14495-41-1, 1,2,3,4-Cyclobutanetetracarboxylic acid, tetramethyl ester
 (stereoisomers)

RN 14495-41-1 CAPLUS
CN 1,2,3,4-Cyclobutanetetracarboxylic acid, 1,2,3,4-tetramethyl ester (CA INDEX NAME)



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L9 11 L8

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L9 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 2005:232606 CAPLUS
DOCUMENT NUMBER: 142:309902
TITLE: The use of fumaric acid derivatives for treating
cardiac insufficiency, and asthma
INVENTOR(S): Joshi, Rajendra Kumar; Strelbel, Hans-Peter; Zaugg,
Christian; Tamm, Michael
PATENT ASSIGNEE(S): Fumapharm A.-G., Switz.
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|------------------|-------------|
| WO 2005023241 | A1 | 20050317 | WO 2004-EP9835 | 20040903 |
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LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
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SN, TD, TG | | | | |
| DE 10360869 | A1 | 20050407 | DE 2003-10360869 | 20031223 |
| AU 2004269903 | A1 | 20050317 | AU 2004-269903 | 20040903 |
| CA 2526586 | A1 | 20050317 | CA 2004-2526586 | 20040903 |
| EP 1663197 | A1 | 20060607 | EP 2004-764790 | 20040903 |
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| BR 2004010805 | A | 20060627 | BR 2004-10805 | 20040903 |
| CN 1829505 | A | 20060906 | CN 2004-80021724 | 20040903 |
| AT 380027 | T | 20071215 | AT 2004-764790 | 20040903 |
| RU 2313339 | C2 | 20071227 | RU 2005-141547 | 20040903 |
| EP 1913942 | A2 | 20080423 | EP 2007-121903 | 20040903 |
| EP 1913942 | A3 | 20080521 | | |
| R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IT, LI, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, HR, LT, LV, MK | | | | |
| ES 2297461 | T3 | 20080501 | ES 2004-764790 | 20040903 |
| JP 2008529959 | T | 20080807 | JP 2006-515290 | 20040903 |
| NZ 543708 | A | 20081128 | NZ 2004-543708 | 20040903 |
| MX 2006002657 | A | 20060605 | MX 2006-2657 | 20060308 |
| US 20070027076 | A1 | 20070201 | US 2006-571241 | 20060309 |
| NO 2006001340 | A | 20060324 | NO 2006-1340 | 20060324 |
| IN 2006KN00784 | A | 20080926 | IN 2006-KN784 | 20060331 |
| PRIORITY APPLN. INFO.: | | | DE 2003-10341530 | A 20030909 |
| | | | DE 2003-10360869 | A 20031223 |
| | | | EP 2004-764790 | A3 20040903 |
| | | | WO 2004-EP9835 | W 20040903 |

OTHER SOURCE(S):

MARPAT 142:309902

AB According to a first aspect the invention relates to the use of fumaric acid derivs. selected from the group consisting of dialkyl fumarates, monoalkyl hydrogen fumarates, fumaric acid monoalkyl ester salts, fumaric acid monoamides, monoamido fumaric acid salts, fumaric acid diamides, monoalkyl monoamido fumarates, carbocyclic and oxacarbocyclic oligomers of these compds. and mixts. thereof for preparing a drug for the treatment or prevention of cardiac insufficiency, in particular left ventricular insufficiency, myocardial infarction and angina pectoris. According to a second aspect the invention relates to the use of fumaric acid derivs., selected from the group consisting of dialkyl fumarates, monoalkyl hydrogen fumarates, fumaric acid monoalkyl ester salts, fumaric acid monoamido fumaric acid salts, fumaric acid diamides, monoalkyl monoamido fumarates, carbocyclic and oxacarbocyclic oligomers of these compds. and mixts. thereof for preparing a drug for the treatment of asthma and chronic obstructive pulmonary diseases, especially asthma caused by allergies, infections, analgesics, job conditions or phys. effort, mixed forms of asthma, or asthma cardiale.

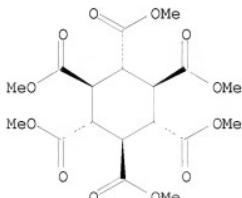
IT 94054-02-1

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(use of fumaric acid derivs. for treating cardiac failure, and asthma)

RN 94054-02-1 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



REFERENCE COUNT:

4

THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:837151 CAPLUS

DOCUMENT NUMBER: 139:328252

TITLE: Carbocyclic and oxacarbocyclic fumaric acid oligomers as pharmaceuticals

INVENTOR(S): Joshi, Rajendra Kumar; Streb, Hans-Peter

PATENT ASSIGNEE(S): Fumapharm A.-G., Switz.

SOURCE: PCT Int. Appl., 28 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| WO 2003087174 | A2 | 20031023 | WO 2003-EP3498 | 20030403 |
| WO 2003087174 | A3 | 20040108 | | |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KE, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
 PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
 UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
 BE, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 DE 10217314 A1 20031113 DE 2002-10217314 20020418
 CA 2476298 A1 20031023 CA 2003-2476298 20030403
 AU 2003216916 A1 20031027 AU 2003-216916 20030403
 EP 1494992 A2 20050112 EP 2003-712131 20030403
 EP 1494992 B1 20080528
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 EP 1671965 A2 20060621 EP 2006-6969 20030403
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 NZ 534620 A 20070831 NZ 2003-534620 20030403
 AT 396966 T 20080615 AT 2003-712131 20030403
 US 20050148664 A1 20050707 US 2004-511564 20040105
 PRIORITY APPLN. INFO.: DE 2002-10217314 A 20020418
 EP 2003-712131 A3 20030403
 WO 2003-EP3498 W 20030403

OTHER SOURCE(S):

MARPAT 139:328252

AB The title oligomers, with good hydrolysis resistance and useful in pharmaceuticals, are cyclic oligomers of fumaric acid or derivs. of specified structure. A homogenized (sieve 800) mixture of 6.0 kg r-1, t-2, c-3, t-4-tetrakis(methoxycarbonyl)cyclobutane and 3.0 kg r-1, t-2, c-3, t-4, c-5, t-6-hexa(methoxycarbonyl)cyclohexane was mixed (9.0 kg) with a starch derivative (STA-RX 1500) 18.0, microcryst. cellulose (Avicel PH 101) 0.30, poly(vinylpyrrolidone) (Kollidon 120) 0.75, Primogel 4.00, and colloidal SiO2 (Aerosil) 0.25 kg was powdered to sieve 200, mixed with 2% aqueous

Kollidon binder, dried, mixed with 0.50 kg Mg stearate and 1.50 kg talc, pressed to tablets, coated (for resistance to gastric juices) with a solution of 2.250 kg hydroxypropyl Me cellulose phthalate (Parmacoat HP 50) in acetone-EtOH-H2O, dried, and finish-coated.

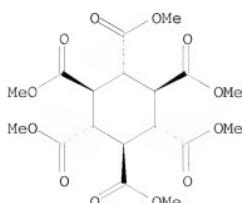
IT 94054-02-1

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(carbocyclic and oxacarbocyclic fumaric acid oligomers as pharmaceuticals)

RN 94054-02-1 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanhexacarboxylic acid, hexamethyl ester,
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β) - (9CI) (CA INDEX
NAME)

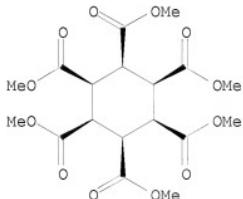
Relative stereochemistry.



REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

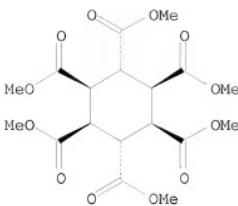
L9 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1985:577814 CAPLUS
DOCUMENT NUMBER: 103:177814
ORIGINAL REFERENCE NO.: 103:28599a,28602a
TITLE: The behavior of stereoisomeric ions in the gas phase.
2 - negative and positive chemical ionization of
cyclohexanehexacarboxylic methyl esters
AUTHOR(S): Audisio, Guido; Grassi, Maria; Traldi, Piero; Daolio,
Sergio
CORPORATE SOURCE: Ist. Chim. Macromol., Milan, 20133, Italy
SOURCE: Organic Mass Spectrometry (1985), 20(5), 327-30
CODEN: ORMSBG; ISSN: 0030-493X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The pos. and neg. ion chemical ionization mass spectra of the title esters were studied. The rel. abundance of fragment ions at m/z 401 in the pos. ion spectra obtained for the esters studied is directly dependent on the trend of the different isomers to epimerize. A 3-step mechanism involves protonation, epimerization, and fragmentation.
IT 77117-51-2 83238-59-9 83861-33-0
94054-00-9 94054-01-0 94054-02-1
RL: PRP (Properties)
(neg. and pos. chemical ionization mass spectra of)
RN 77117-51-2 CAPLUS
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 α ,5 α ,6 α)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



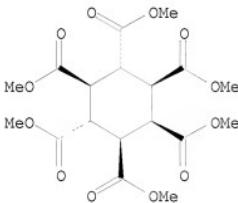
RN 83238-59-9 CAPLUS
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 β ,4 α ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



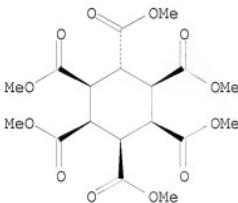
RN 83861-33-0 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 $(1\alpha,2\alpha,3\alpha,4\beta,5\alpha,6\beta)-$ (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



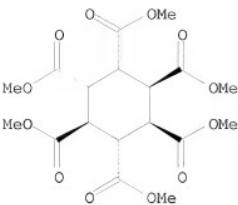
RN 94054-00-9 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 $(1\alpha,2\alpha,3\alpha,4\alpha,5\alpha,6\beta)-$ (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



RN 94054-01-0 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 $(1\alpha,2\alpha,3\beta,4\alpha,5\beta,6\beta)-$ (9CI) (CA INDEX
 NAME)

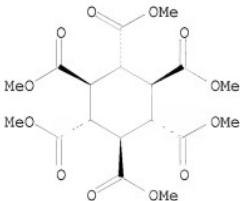
Relative stereochemistry.



RN 94054-02-1 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 (1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



L9 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1985:487249 CAPLUS

DOCUMENT NUMBER: 103:87249

ORIGINAL REFERENCE NO.: 103:14013a,14016a

TITLE: Stereochemical study of

1,2,3,4,5,6-(hexamethoxycarbonyl)cyclohexanes

AUTHOR(S): Farina, Mario; Grassi, Maria; Di Silvestro, Giuseppe

CORPORATE SOURCE: Dip. Chim. Org. Ind., Univ. Milano, Milan, I-20133,
 Italy

SOURCE: Journal of the American Chemical Society (1985),
 107(18), 5100-4

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 103:87249

AB The *cis*, *epi*, *myo*, *muco*, *chiro*, and *scyllo* stereoisomers of the title compound were prepared directly from bicyclooctene precursors or by epimerization, their structure being ascertained by NMR anal. and by x-ray anal. The stereochem. pathway of alkaline epimerization was found to be *cis* → *epi*. *d*blarw. *muco*. *d*blarw. *chiro*. *d*blarw. *myo*. *d*blarw. *scyllo*. A seventh compound, detected by gas chromatog. after a long reaction time, was tentatively identified as *neo*. The most abundant isomer in the equilibrium mixture at 25° is *myo*; however, if one considers the difference in symmetry, the order of stability in terms of conformational energy is *scyllo* > *myo* > *chiro* > *muco*. An interesting regioselective phenomenon was observed during ozonolysis of a bicyclooctene precursor and was attributed to the different stereochem. environment of the two unsatd. atoms involved in the reaction.

IT 83238-59-9P 83861-33-0P 94054-00-9P

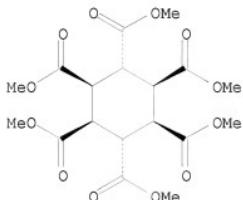
94054-01-0P 94054-02-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation and NMR of)

RN 83238-59-9 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

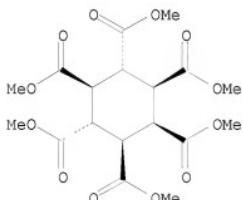
Relative stereochemistry.



RN 83861-33-0 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

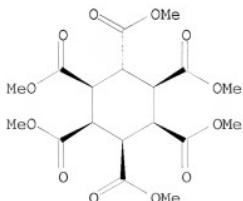
Relative stereochemistry.



RN 94054-00-9 CAPLUS

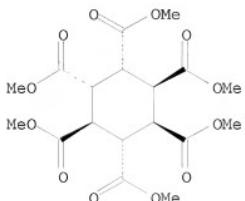
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 α ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



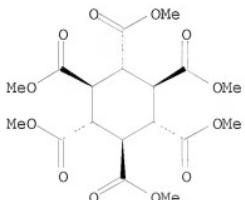
RN 94054-01-0 CAPLUS
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 β ,4 β ,5 β ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



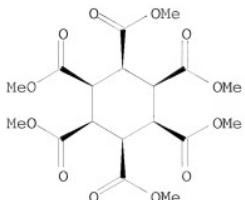
RN 94054-02-1 CAPLUS
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



IT 77117-51-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation, epimerization, and NMR of)
RN 77117-51-2 CAPLUS
CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 α ,5 α ,6 α)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



L9 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1985:23948 CAPLUS

DOCUMENT NUMBER: 102:23948

ORIGINAL REFERENCE NO.: 102:3935a, 3938a

TITLE: The behavior of stereoisomeric ions in the gas phase:
the case of cyclohexanehexacarboxylic methyl esters
Audisio, Guido; Grassi, Maria; Daolio, Sergio; Traldi,
Pietro

CORPORATE SOURCE: Ist. Chim. Macromol., CNR, Milan, 20133, Italy

SOURCE: Organic Mass Spectrometry (1984), 19(5), 221-6

CODEN: ORMSBG; ISSN: 0030-493X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Not only strong differences in relative abundances of product ions, but also different fragmentation paths are observed in the electron impact mass spectroscopy of 6 stereoisomeric cyclohexanehexacarboxylic Me esters. This unusual behavior was studied using different ionization methods, B/E and B2/E linked scans, exact mass measurements, D labeling expts., and collisionally activated decomposition spectrometry. A close analogy between the isomerization observed under acidic conditions in condensed phase and that observed under chemical ionization (CH₄) conditions is underlined.

IT 77117-51-2 83238-59-9 83861-33-0

94054-00-9 94054-01-0 94054-02-1

RL: PRP (Properties)

(mass spectrum of, electron-impact)

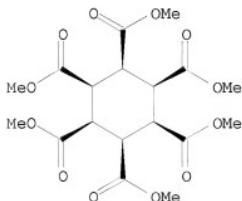
RN 77117-51-2 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,

(1 α ,2 α ,3 α ,4 α ,5 α ,6 α)- (9CI) (CA INDEX

NAME)

Relative stereochemistry.



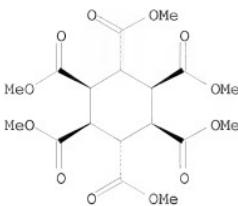
RN 83238-59-9 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,

(1 α ,2 α ,3 β ,4 α ,5 α ,6 β)- (9CI) (CA INDEX

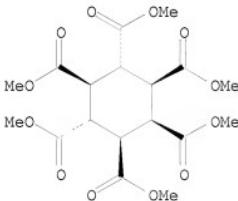
NAME)

Relative stereochemistry.



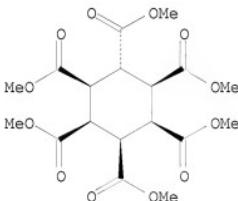
RN 83861-33-0 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 (1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



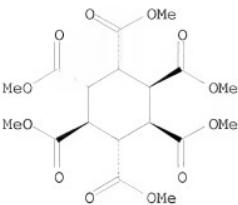
RN 94054-00-9 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 (1 α ,2 α ,3 α ,4 α ,5 α ,6 β)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



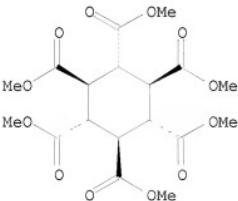
RN 94054-01-0 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 (1 α ,2 α ,3 β ,4 β ,5 β ,6 β)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



RN 94054-02-1 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
 (1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



L9 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1982:627952 CAPLUS

DOCUMENT NUMBER: 97:227952

ORIGINAL REFERENCE NO.: 97:38019a,38022a

TITLE: Crystal structures of:

r-1,c-2,t-3,c-4,t-5,c-6-

hexamethoxycarbonylcyclohexane, C18H24O12,

r-1-ethoxycarbonyl,c-2,t-3,c-4,t-5,c-6-

pentamethoxycarbonylcyclohexane, C19H26O12

AUTHOR(S): Brueckner, S.; Malpezzi, L.; Grassi, M.

CORPORATE SOURCE: Ist. Chim., Politec. Milano, Milan, 20133, Italy

SOURCE: Crystal Structure Communications (1982), 11(3), 1043-8

CODEN: CSMCSC; ISSN: 0302-1742

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Hexamethoxycarbonylcyclohexane is orthorhombic, space group Pbca, with a 15.236(3), b 14.935(3), and c 18.986(4) Å; d.(calculated) = 1.328 for Z = 8; final R = 0.049. (Ethoxycarbonyl)pentamethoxycarbonylcyclohexane is monoclinic, space group P21/c, with a 9.278(2), b 22.802(4), c 11.564(3) Å, and β 112.70(3)°; d.(calculated) = 1.35 for Z = 4; final R = 0.56. Atomic parameters are given. Substitution of a Me group with an Et group in the ester residue axially connected to the cyclohexane ring does not involve significantly different intramolecular interactions. The most relevant difference concerns the orientation of the carbomethoxy group connected to the cyclohexane ring through the C(5)-C(O) bond.

IT 83834-82-6 83861-33-0

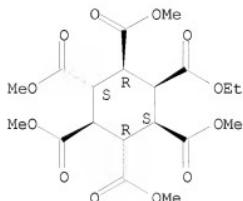
RL: PRP (Properties)

(crystal structure of)

RN 83834-82-6 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, ethyl pentamethyl ester,
(1 α ,2 α ,3 β ,4 α ,5 β ,6 α)- (9CI) (CA INDEX
NAME)

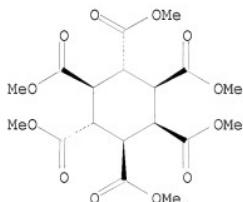
Relative stereochemistry.



RN 83861-33-0 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



L9 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1982:561924 CAPLUS

DOCUMENT NUMBER: 97:161924

ORIGINAL REFERENCE NO.: 97:26997a,27000a

TITLE: Ring inversion of

AUTHOR(S): muco-1,2,3,4,5,6-hexakis(methoxycarbonyl)cyclohexane
Gatti, Giuseppe; Grassi, Maria; Di Silvestro, Giuseppe

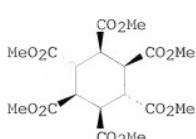
CORPORATE SOURCE: Ist. Chim. Macromol., Milan, I-20133, Italy

SOURCE: Journal of Chemical Research, Synopses (1982), (7),
196

DOCUMENT TYPE: CODEN: JRPSDC; ISSN: 0308-2342

LANGUAGE: Journal

GI English



I

AB The title compound (**I**) was prepared by epimerization of the corresponding cis ester (**II**) with NaOMe in refluxing MeOH and by sequential ozonolysis, oxidation, and esterification of 5,7-exo-6,8-endo-tetrakis(methoxycarbonyl)bicyclo[2.2.2]oct-2-ene. ¹³C NMR study of **I** at -64 to +20° gave activation parameters $\Delta H^{\ddagger} = 11.79$, $\Delta G^{\ddagger}(25^{\circ}) = 12.14$ kcal/mol and $\Delta S^{\ddagger} = -1.2$ cal/K/mol for ring inversion. The free-energy barrier to activation is considerably lower than for **II** (16.7 kcal/mol), owing to a decrease in the energy of the transition state due to smaller nonbonded interactions between substituents.

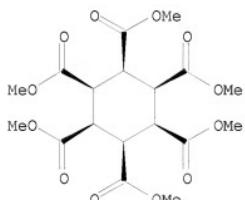
IT 77117-51-2

RL: RCT (Reactant); RACT (Reactant or reagent)
(epimerization of)

RN 77117-51-2 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1a,2a,3a,4a,5a,6a)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



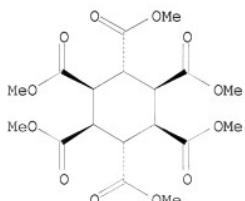
IT 83238-59-9P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and conformational inversion of, potential barrier to)

RN 83238-59-9 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1a,2a,3β,4a,5a,6β)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



L9 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1982:405471 CAPLUS

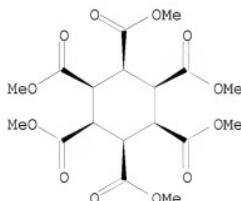
DOCUMENT NUMBER: 97:5471

ORIGINAL REFERENCE NO.: 97:1067a,1070a

TITLE: Ring reversal of

AUTHOR(S): Gatti, Giuseppe; Grassi, Maria; Di Silvestro, Giuseppe; Farina, Mario; Bruckner, Sergio
 CORPORATE SOURCE: Inst. Chim. Macromol., CNR, Milan, I-20133, Italy
 SOURCE: Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1972-1999) (1982), (3), 255-8
 DOCUMENT TYPE: CODEN: JCPKBH; ISSN: 0300-9580
 LANGUAGE: English
 AB NMR studies showed that the title compds. (I and II, resp.) exist in solution at room temperature as an equilibrium of slowly exchanging chair conformations. The activation parameters were determined from complete line-shape anal. of the ^{13}C NMR spectra measured at different temps. A relatively high value (.apprx.17 kcal/mol) of the free energy of activation was found for both I and II. The energy barrier of the acid was calculated by mol. mechanics and the computer program MOLBD3. The value obtained (16 kcal/mol) is a slight overest., by comparison with the observed value of 13-14.5 kcal/mol.
 IT 77117-51-2
 RL: PRP (Properties)
 (conformational inversion of, NMR and theor. study of)
 RN 77117-51-2 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanhexacarboxylic acid, hexamethyl ester,
 (1a,2a,3a,4a,5a,6a)- (9CI) (CA INDEX
 NAME)

Relative stereochemistry.



L9 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1981:148672 CAPLUS
 DOCUMENT NUMBER: 94:148672
 ORIGINAL REFERENCE NO.: 94:24177a, 24180a
 TITLE: The structure of 1,2,3,4,5,6-cis-cyclohexanhexacarboxylic acid and its hexamethyl ester
 AUTHOR(S): Brueckner, Sergio; Giunchi, Luciana Malpezzi; Di Silvestro, Giuseppe; Grassi, Maria
 CORPORATE SOURCE: Ist. Chim., Politec. Milano, Milan, 20133, Italy
 SOURCE: Acta Crystallographica, Section B: Structural Crystallography and Crystal Chemistry (1981), B37(3), 586-90
 DOCUMENT TYPE: CODEN: ACBCAR; ISSN: 0567-7408
 LANGUAGE: English
 AB $\text{C}_{12}\text{H}_{12}\text{O}_{12} \cdot 3\text{H}_2\text{O}$ is orthorhombic, space group $\text{P}212121$, with a $13.44(1)$, b $11.18(1)$, c $10.37(1)$ Å; Z = 4; final R = 0.055. $\text{C}_{18}\text{H}_{24}\text{O}_{12}$ is orthorhombic, space group Pbca , with a $34.79(3)$, b $20.63(2)$, and c

11.58(1) Å; Z = 8 (2 mols./Z); final R = 0.059. A comparison is drawn between observed geometries and data calculated for a model mol. by the use of the mol.-mechanics method.

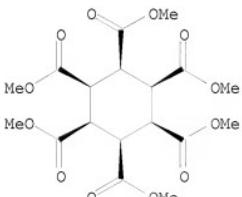
IT 77117-51-2

RL: PRP (Properties)
(structure of)

RN 77117-51-2 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid, hexamethyl ester,
(1a,2a,3a,4a,5a,6a)- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



L9 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1976:92567 CAPLUS

DOCUMENT NUMBER: 84:92567

ORIGINAL REFERENCE NO.: 84:15113a, 15116a

TITLE: Use of amides of cyclic polycarboxylic acids as motor fuel additives

INVENTOR(S): Nottes, Guenther; Nohe, Heinz

PATENT ASSIGNEE(S): BASF A.-G., Fed. Rep. Ger.

SOURCE: Ger. Offen., 13 pp. Addn. to Ger. Offen. 2,256,690.

CODEN: GWXXBX

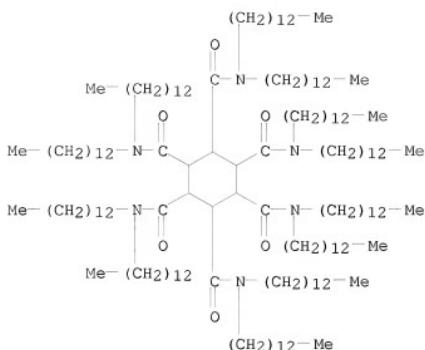
DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

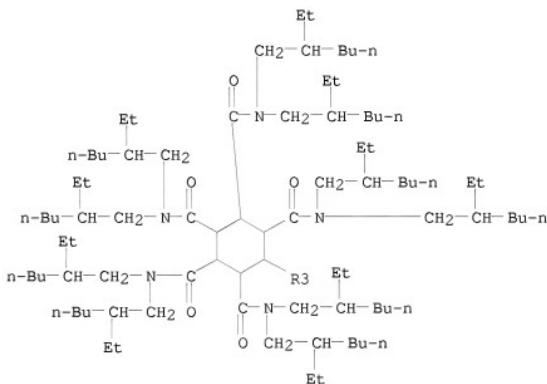
PATENT INFORMATION:

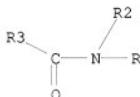
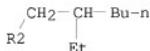
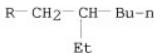
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| DE 2417788 | A1 | 19751030 | DE 1974-2417788 | 19740411 |
| PRIORITY APPLN. INFO.: | | | DE 1974-2417788 | 19740411 |
| AB Cyclic polycarboxylic acid amides were prepared and used as gasoline additives. Thus, 248 parts bicyclooctenetetracarboxylic dianhydride [1719-83-1] in DMF at 60° was treated with 258 parts 2-ethylhexylamine [104-75-6], and the mixture was heated 8 hrs at 140-50° to yield 97% bicyclooctenetetracarboxylic acid bis(2-ethylhexylimide) (I) [58365-41-6]. Carburetor and inlet valves in motors tested with fuels containing I remained clean with no increase in CO emission. | | | | |
| IT 58365-45-0P 58403-36-4P
RL: PREP (Preparation)
(manufacture of, as gasoline additives) | | | | |
| RN 58365-45-0 CAPLUS | | | | |
| CN 1,2,3,4,5,6-Cyclohexanehexacarboxamide,
N1,N1,N2,N2,N3,N3,N4,N4,N5,N5,N6,N6-dodecatridecyl- (CA INDEX NAME) | | | | |



RN 58403-36-4 CAPLUS
 CN 1,2,3,4,5,6-Cyclohexanehexacarboxamide,
 N1,N1,N2,N2,N3,N3,N4,N4,N5,N5,N6,N6-dodecakis(2-ethylhexyl)- (CA INDEX
 NAME)

PAGE 1-A





L9 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1975:46236 CAPLUS
 DOCUMENT NUMBER: 82:46236
 ORIGINAL REFERENCE NO.: 82:7351a,7354a
 TITLE: Fuel for gasoline engines, containing nonaromatic cyclic carboxylic acid ester
 INVENTOR(S): Nottes, Guenter; Nohe, Heinz
 PATENT ASSIGNEE(S): BASF A.-G.
 SOURCE: Ger., 4 pp.
 CODEN: GWXXAW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|-----------------|-----------------|----------|
| DE 2304068 | B1 | 19740606 | DE 1973-2304068 | 19730127 |
| DE 2304068 | C2 | 19750130 | | |
| DE 2316535 | A1 | 19741024 | DE 1973-2316535 | 19730403 |
| NL 7315694 | A | 19740521 | NL 1973-15694 | 19731115 |
| CA 1019571 | A1 | 19771025 | CA 1973-185873 | 19731115 |
| FR 2207180 | A1 | 19740614 | FR 1973-40906 | 19731116 |
| SU 466666 | A3 | 19750405 | SU 1973-1970238 | 19731116 |
| AT 7309660 | A | 19750615 | AT 1973-9660 | 19731116 |
| AT 3286025 | B | 19760325 | | |
| SE 383161 | B | 19760301 | SE 1973-15568 | 19731116 |
| IT 1001797 | B | 19760430 | IT 1973-31411 | 19731116 |
| GB 1442143 | A | 19760707 | GB 1973-53221 | 19731116 |
| BE 807489 | A1 | 19740520 | BE 1973-137895 | 19731119 |
| JP 49081408 | A | 19740806 | JP 1973-129287 | 19731119 |
| JP 51039963 | B | 19761030 | | |
| PRIORITY APPLN. INFO.: | | | | |
| | | DE 1972-2256690 | A | 19721118 |
| | | DE 1973-2304068 | A | 19730127 |
| | | DE 1973-2316535 | A | 19730403 |

AB Additives like tetrakis(2-ethylhexyl) bicyclooctenetracarboxylate [53525-50-1] and hexakis(2-ethylhexyl) cyclohexanehexacarboxylate (I) [53602-55-4] prevent formation of deposits on carburetors and therefore decrease the amount of CO in the exhaust. Thus, in a 1-cylinder test motor, run for 50 hr with fuel containing 500 ppm I, no deposits formed, corresponding to a demerit value of 10 on a 0-10 scale, whereas fuel containing 1000 ppm dioctyl phthalate rated 1. In an idling Fiat 600 D motor,

run with fuel containing 100 ppm I, CO output had not increased after 100 hr, whereas CO output increased from 3.7-4.4 to 7.1% within 50 hr when the fuel contained no I.

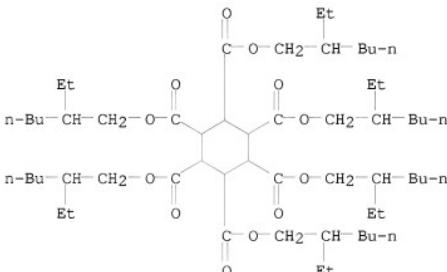
IT 53602-55-4 53667-52-0

RL: USES (Uses)

(gasoline detergent)

RN 53602-55-4 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid,
1,2,3,4,5,6-hexakis(2-ethylhexyl) ester (CA INDEX NAME)



RN 53667-52-0 CAPLUS

CN 1,2,3,4,5,6-Cyclohexanehexacarboxylic acid,
1,2,3,4,5,6-hexakis(1-methylpropyl) ester (CA INDEX NAME)

